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New Orleans Medical

and

Surgical Journal

Vol. 89 JANUARY, 1937 No. 7

THE ORATION COMMEMORATING THE ONE HUNDREDTH ANNIVERSARY OF THE FOUNDING OF THE ARMY MEDICAL LIBRARY, WASHINGTON

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It is a very high honour as well as a most pleasant privilege to assist at the Centennial of the conception of the Library of the Surgeon-General's Office, United States Army, now containing more than a million items and the largest Medical Library in the world. George Adami (1914) described the Index-Catalogue and the Index-Medicus as America's greatest gift to medicine, and in his admirable paper The Centennial of the World's Largest Medical Library: The Army Medical Library of Washington, from which I have freely drawn, Major E. Erskine Hume, the late Librarian, tells us that Professor William H. Welch not only expressed a similar considered opinion in 1921, but at his last visit to the Library placed it above America's services in connection with anesthesia, the insect transmission of disease, and the development of Public Health Laboratories.

The transformation of medicine in America during the last twenty years of the nineteenth century and after was due to several causes; among others to the men of Billings' generation, especially Welch and Osler, to the example set by the John Hopkins University and Hospital, to the Library of the Surgeon-General's Office, its Index-Catalogue and the Index Medicus. The Johns Hopkins Hospital, the Library, its Index-Catalogue, and the Index Medicus were largely the offspring of Billings' energetic initiative.

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LIBRARIES

Libraries and Museums are important instruments in medical education and progress. They resemble each other as reservoirs of sound learning gathered from practical experience. This correlation of knowledge, shown by the oldest scientific museum in Great Britain, the Ashmolean Museum (1679) at Oxford, which was under the same roof as the library of natural history and philosophy, and also by the original British Museum (1754) in Bloomsbury, the Natural History part of the Museum being moved to South Kensington and opened in 1881, was confirmed, as regards medicine, by the Army Medical Museum which contains the Army Medical Library.

It may be interesting to note that by his will (1695) Anthony Wood left all his manuscripts and books to the Ashmolean Museum rather than to the Bodleian Library (founded 1598) of which he had been given the free run. Was this evidence of ingratitude and in conformity with his difficult temperament, or of an unsuspected broadmindedness?

Another resemblance is that verbal descriptions and illustrations in books and atlases reproduce specimens on the shelves of museums, and conversely complete accounts of such morbid specimens, the latter being "the original documents" (Keith), should include the clinical details.

The earliest repositories of records, the representatives of books, were either in temples because in all civilizations the priesthood has been *par excellence* the learned class, or in palaces, because rulers often patronized literature and art. Chambers for the storage of records in

the form of inscribed tablets and cylinders of baked clay were discovered by Sir Henry Layard in 1850 in the Assyrian palaces of the Kings Sennacherib, Esarhadden and Ashur-bani-pal, going back to B. C. 700. The subsequent history of libraries in ancient Greece, Alexandria, Pergamos and Rome has been discussed by J. W. Clark.

Museums, especially medical museums, were a more modern development. It is true that the first recorded institution to bear the name of museum (temple or haunt of the muses) was that founded at Alexandria about B. C. 300 by Ptolemy Soter (B. C. 367-283); but this did not conform to the modern meaning of the word, for it was an academy or meeting place for learned men (Flower). John Hunter's great collection in the eighteenth century exerted a powerful influence, as shown by the activities in the last century of Sir Astley Cooper (1768-1841) of Guy's Hospital, Sir Benjamin Brodie (1783-1862) of St. George's Hospital in London, by Sir Henry Acland (1815-1900) who from 1845 taught the preliminary medical sciences with the help of a museum at Oxford, and by Sir George Humphrey (1820-96) who adopted the same method in Cambridge. The relative importance attached to medical libraries and museums, has varied to some extent from time to time, no doubt as a result of the enthusiasm of prominent authorities. Physicians have usually turned more to libraries, and surgeons have done more for museums, but this is far from being a rigid rule. Rarely has the same man whole-heartedly and equally promoted them both; such, however, were the physicians Sir Hans Sloane (1660-1753), President of the Royal Society and of the Royal College of Physicians of London, whose collections of natural history, objects of virtu (69,352), books (50,000), and valuable manuscripts formed the nucleus of the British Museum, and Sir William Osler (1849-1919) whose generosity to many libraries, especially to his alma mater, Montreal, and his advocacy of medical museums is known to all.

About the middle of the last century the formation of museums was more keenly carried out than that of libraries, and may have represented a healthy opposition to mere traditional authority, and have been inspired by a preference for an appeal to the visible evidence or in obedience to John Hunter's admonition to Edward Jenner "Don't think, try". This advice is equally, if not even more, applicable now that functional disorder in medicine has taken a part, formerly almost monopolized by morbid structural change. The use of the experimental method in the elucidation of disease has tended to transfer the illustrations of disease from the pathologic museum to the laboratory.

Medical libraries a century ago were generally those of individual medical men and, as in the case of the famous libraries of Richard Mead (1673-1754) and Anthony Askew (1722-74) in the previous century, were often sold and dispersed after the death of the owners. Those of institutions left much to be desired, as Billings found to his discomfiture in 1860 in the United States. In the seventies of the last century when the Surgeon-General's Library was coming to its second birth and rapid growth, the idea of medical libraries was stirring in North America, and in some instances, such as at Boston, quickened after a somewhat remote conception, and very probably by the activities of Billings.

It is surely quite unnecessary to attempt to preach to the converted on the value and inspiring virtue of medical libraries, for this has been so conclusively set forth by Billings, by Oliver Wendell Holmes (1809-94) at the first opening of the Boston Medical Library in 1878, by Osler in Books and Men, also at the Boston Medical Library when a new building was opened in 1901, and in 1926 at Cleveland in the charming address The Doctor and His Books by Professor Harvey Cushing, Osler's greatest pupil, who could so convincingly have shown here and now how well that tradition has been maintained.

THE ARMY MEDICAL LIBRARY

The laymen in the street might be puzzled to explain why and how it came about that the Surgeon-General of an Army, however great, should have such a library as this attached to his office which is devoted more to active organization and orders than to medical bibliography, ancient and modern. The answer, clear

to everyone here, is the personality of John Shaw Billings of the Surgeon-General's Office and the creator of its library. Originally a small collection of reference books for the use of the Surgeon-General (Joseph Lovell) in his office at Washington, it long remained in a state of suspended animation. In 1840 a manuscript catalogue listed 135 works (228 volumes); at the outbreak of the Civil War (1861) the number of volumes was between three and four hundred; on May 10, 1864, seven and a half months before Billings came on the scene as the first person to be in any way, for he was only nominally not officially, responsible for the books, a printed catalogue showed a total of 1365 volumes; in another printed catalogue dated October 23, 1865, the number had risen to 2258. Growth then became rapid; in 1868 the sum of eighty thousand dollars left over from the Funds of Civil War hospitals was made available for the library, Billings being given discretionary powers; and on June 12 of that year a printed catalogue referred to 6066 volumes, showing that Billings had not lost any time in building up the Library; in 1871 a Catalogue, published 1872, ran to 454 pages and showed that the number (13,380) had doubled. In 1873 a printed catalogue of 2468 pages in three volumes, the first two arranged under the heading of authors only, and the third containing anonymous works, transactions, reports, and periodicals, came out under Billings' direction. The Library then contained 25,000 volumes and 15,000 separate pamphlets. It may be safely assumed that Billings was now steering straight towards the great conception ultimately achieved by the Surgeon-General's Library and its Index-Catalogue. In 1876 the Library contained forty thousand volumes and as many pamphlets, and in 1895, when he retired, the number had increased to 308,445.

Besides books, pamphlets, the valuable collections of 450 out of the estimated 600 medical incunabula (books printed before 1500), and of Paris theses unrivalled even in their native city, the Library has five thousand portraits of medical men, and a collection of medical autographs, to which Abraham Jacobi and Garrison made generous contributions. The Army Medical Library stimulated beneficial imitation, which charitably began at home, for in 1929 there were 200 medical libraries in the United States as compared with 118 in Europe (Garrison).

From 1865 to 1887 the Army Medical Museum, not a fire-proof building which contained the Library, occupied the old Ford's theatre in which Abraham Lincoln had been assassinated on April 14, 1865. This soon became quite inadequate, and Billings, rising to the occasion, obtained funds, Congress appropriated two hundred thousand dollars for the construction, according to his plans, of the present home of the Army Medical Museum, of which he was also curator, and of the library at the corner of Seventh Street and B Street (now Independence Avenue) S. W. This was successfully carried through in time to receive in 1887 the ninth International Medical Congress held at Washington.

History repeats itself, and the Army Medical Museum, up till 1922 always called the Library of the Surgeon-General's Office, has now, as happens sooner or later to active libraries, been faced for some time with the impossibility of further expansion on its present site which indeed is now wanted for the further development of Washington (Reynolds). What better way of celebrating the commencement of the second century of the Library could there be than the erection of a new building so urgently needed and so thoroughly deserved?

The following is the list of the Librarians:

Col. J. S. Billings (1868-95)
Col. D. L. Huntington (1896-7)
Surgeon J. C. Merrill (1898-1902)
Major Walter Reed (1902, died in office)
Brigadier-General Calvin De Witt (1903)
Brigadier-General W. D. McCaw (1903-13)
Col. C. C. McCulloch, Jr. (1913-18)
Brigadier-General F. A. Winter (1918-19)
Col. P. E. Straub (1919)
Major-General R. E. Noble (1919-24)
Col. J. M. Phalon (1924-27)
Col. P. M. Ashburn (1927-32)
Major Edgar Erskine Hume (1932-6)
Col. Harold W. Jones (1936-).

The average tenure of the first thirteen librarians works out at five years, the extreme

being 27 years (Billings) and one year or less in the case of Walter Reed and others. To the high qualifications of his twelve predecessors Major Erskine Hume has paid a graceful tribute. Dr. Beatrix Bickel, who joined the library staff in 1930, was in the following year given the title of chief librarian and is now the first assistant to the librarian.

THE INDEX-CATALOGUE OF THE LIBRARY OF THE SURGEON-GENERAL'S OFFICE

A Library is obviously a great and essential factor in the preservation of knowledge and history. It has, however, been rather pessimistically said that a library is a mausoleum where knowledge lies dead and mummified; this may be real danger unless it is activated and kept alive by a guide to its contents. A library is not complete without a good catalogue, namely one with the double entry of author and subject; and it is obvious that the larger the library the more fully will such a catalogue afford access to existing knowledge, especially when printed and distributed widely to other libraries. The Army Medical Library is the largest of its kind, and more current periodicals are devoted to medicine than to any other branch of science. As long ago as 1887 the Library of the Surgeon-General's Office obtained annually 700 published medical periodicals exclusive of those devoted to pharmacy and to dentistry. Since then they have become much more numerous; at the end of 1912 the total number of current periodicals were estimated at 1654 (C. P. Fisher); the Library received 1895 annually in 1916, the number fell to 1240 in 1920, but rose to 1925 in 1927 (Garrison, 1929), and now is about 1800. Medical journals vary in their span of life; some are quite ephemeral and there appears to have been a considerable mortality during the World War. Their fluctuating population is compatible with Bulloch's estimate that of the 23,000 items in the World List of Scientific Periodicals, covering the years 1900-31, 5000 were medical. The bibliographical scope of the Index-Catalogue is therefore phenomenal, and the widespread appreciation of its help is graphically shown by the worn state of the original bindings, or by new bindings, of its volumes in the medical libraries of Europe.

How does the Index-Catalogue compare with previous medical bibliographies which Osler (1913) optimistically prescribed as the best "float through posterity", for the authors? Conrad Gesner (1516-65), "the father of bibliography" supplied what was in some respects the model for the Bibliotheca Osleriana (1929), hailed by Professor John Fulton "as the greatest achievement of the humanistic movement in medical bibliography". Albrecht von Haller (1708-76), the greatest medical bibliographer of the eighteenth century, dealt with botany, anatomy, physiology, surgery and medicine. W. C. Ploucquet (1744-1814) of Tubingen attempted to provide a complete catalogue of medical literature in his Initia Bibliothecae medico-practicae et Chirurgicae realis (1793-7). Robert Watt (1774-1819) of Glasgow, published in 1812 for the guidance of his students at the Royal Infirmary, A Catalogue of Medical Books. This led to his ambitious and posthumous Bibliotheca Britannica, or a General Index to British and Foreign Literature, in four volumes in 1824, covering law and other subjects in addition to medicine, thus reverting to the status of the scholar-physicians in the sixteenth century when medicine and the natural sciences formed part of the equipment of learned men. The labour thus entailed is said to have been responsible for the death of Watt and later of two of his sons. Thomas Young (1773-1829), physicist, Egyptologist, and physician, the most comprehensive genius and man of science who ever entered the medical profession, brought out in 1813 An Introduction to Medical Literature, including a System of Practical Nosology. A. C. P. Callisen (1787-1866), a Danish surgeon, in the 33 volumes of his Medicinisches Schriftstellen-Lexicon (1830-45) dealt exhaustively with medical publications from the middle of the eighteenth until the end of the first quarter of the nineteenth century. A comic relief to these many-volumed works might be supplied by the Medical Bibliography (1834) of James Atkinson (1759-1839) of York who gave up the task after the letter B, and it has been shrewdly suspected that he never had any intention of carrying it further (Ruhrah). It abounds in witticisms after the manner of Sterne's Tristram Shandy and has

earned for him the title of "a disciple of Rabelais" and as well qualified for residence in the Abbey of Theleme.

Without in any way detracting from the services of these bibliographical fathers it is obvious that the life of a Government Department of public institution is potentially perpetual and not limited by the relatively short span of an individual life. Other medical bibliographers were described by Osler as Lilliputian as compared with the Gargantuan character of the Index-Catalogue.

Among bibliographies that of medicine now takes a very high, if not the highest, place; as so largely responsible for bringing this about, the Index-Catalogue of the Library of the Surgeon-General's Office, which is beyond any comparison the most exhaustive medical bibliography ever undertaken, and the Index-Medicus have made the whole medical world, especially English-speaking readers, hopelessly insolvent debtors. This far-reaching obligation must be most gratefully, and humbly, acknowledged.

The history of the Index-Catalogue began in Billings' brain from his experience in 1860 when the need for such a bibliography was painfully forced on his notice, and it is probable that he began to form plans after being given in 1868 a practically free hand with the fund of eighty thousand dollars; the catalogues published in 1872 and 1873 led up to the definite proposals in 1876 contained in his Specimen Fasciculus of the National Medical Library, under the Direction of the Surgeon-General, United States Army. This was submitted widely to universities, libraries, and medical men for criticism and suggestions. It was arranged under both authors and subjects, and so far-seeing that its style and arrangement were practically those subsequently adopted in the Index-Catalogue. It was warmly welcomed in his dedicatory address at the opening of the Boston Medical Library in 1878 by Oliver Wendell Holmes who correctly prophesied that a liberal appropriation by Congress to carry out such a work for this advancement of sound knowledge and the improvement of human conditions would greatly redound to the honour of the nation.

The first series of the Index-Catalogue began in 1880 when Congress, then urged by Abraham Jacobi (1830-1919) made the first appropriation for this purpose, and its sixteen volumes came out yearly, closing in 1895: it indexed 85,663 author titles; 151,504 pamphlets; of subject titles 168,587 books, and 511,112 journal titles. It was edited by Billings who in the last volume spoke of it as a "labour of love" with the cooperation of Fletcher who supervised the proof-reading and devised the abbreviations of the periodicals. As criticisms of an adverse character of the Index Catalogue have been extremely rare, reference may be made to what Billings said in 1891, when the first twelve volumes of the first series had been published; namely, that the chief serious errors were those of omission and that of these about fifty had so far been detected. In the final volume Billings gave a list of the errors, and remarked that "there are few medical writers now living who have not sent to the library at least one pamphlet." In the vast volume of the second series (1916) the Librarian, Lieutenant-Colonel C. C. McCulloch, Junior, repeated this statement with a wider application to all members of the profession; namely, that "few physicians have not donated some book, pamphlet, or reprint of their own composition."

The second series consisted of 21 volumes which were issued between 1896 and 1916, and were edited by Robert Fletcher until his death in 1912 and was completed by Garrison and Allemann.

The third series (1918-32) consisted of ten volumes and indexed medical literature up to the end of 1925, under the direction of Albert Allemann who was principal assistant librarian from 1922 to 1932.

The Fourth Series. At one time it was arranged that the Index-Catalogue should come to an end with the third series. This would have been a bibliographical catastrophe of the first magnitude and have required some corresponding substitute, such as a clearing house of knowledge under the League of Nations a suggestion made in the British Medical Journal in 1929. But fortunately in the following year anxiety was relieved by Surgeon-General M. W. Ireland who, after receiving and considering opinions from

various sources, announced that another series would at once be undertaken. In the recently issued first volume of this fourth series some changes have been made: the abbreviations have been shortened; in the references the volume numbers are in Arabic instead of Roman, the Arabic numbers being printed in bold face-type, and the use of eponymous titles in the nomenclature of diseases is avoided as far as possible, an example which it is hoped will be widely followed. An important factor in the success of the Index-Catalogue has been the way in which the difficult task of separating the chaff from the wheat has been carried out. The decision of what articles should be included has probably presented less difficulty from that of exclusion, for a paper manifestly unorthodox and badly expressed may yet contain an idea or observation destined to be most important.

THE INDEX-MEDICUS

This famous and invaluable monthly bibliography of the world's medical publications, though long a close companion and immediate supplement of the Index-Catalogue, was never an official government periodical, and therefore depended for financial support on its sales, thus causing its devoted editor, Fletcher, much business worry. In Garrison's words (1913) "the work of copying out the library cards for redaction was parcelled out, as the celebrated Haller did with his eighteenth century biblography of medicine, among the wives and daughters of the library force as private work". It became a sort of annual Index-Catalogue in miniature (Garrison, 1915) and, like the larger work, had a double entry of subject and author. Starting in January 1879, a year before the first volume of the Index-Catalogue appeared, it came out monthly until May 1899 when it sank in financial deep water; for, in spite of the help it gave medical writers, its subscription list was never large, much less sufficient to meet the expenses of publication. Many of us, it must be feared, regarded the Index-Medicus and the Index-Catalogue, as natural blessings, like fresh air and sunshine, and did not realize that gratitude should take a more practical form than passive expectation of their continuance. Three more volumes (1900-2) were brought out under the title Bibliographia Medica (Index Medicus) in Paris with the support of C. Petain (1825-1901), G. Debove (1845-1920), Charles Richet (1850-1935) with Marcel Baudouin (1860-) as editor-in-chief. In 1903 the Index-Medicus was given a fresh lease on life by the wise generosity of the Carnegie Institute of Washington which had been incorporated in 1902 with Billings as vice-chairman of the Board of Trustees. The Index-Medicus continued until 1927 when it was amalgamated with The Quarterly Cumulative Index to Current Medical Literature, published since 1916 by the American Medical Association, under the title of The Quarterly Cumulative Index Medicus, the Carnegie Institute and the American Medical Association both giving their support. Billings and Fletcher edited the twenty-one volumes of the first series (1879-99), and Fletcher, who had previously been mainly responsible for the editorial arrangements, was editor-in-chief for the nine years 1903-12, with the active help of Garrison who completed the second series (1903-20) without any co-editor. The third series (1920-26) was edited by Garrison and Albert Allemann who both joined, as associate editors, the Board of The Quarterly Cumulative Index Medicus, Garrison resigning in June, 1929, a year before he was retired from the active list of the Army.

LIBRARIANS

Like many other lovers of literature, whole-time librarians usually lead secluded lives outside the ambit of the limelight. The ideal librarian is a saintly, self-denying character with a keen interest not only in books but in their would-be readers, whose time he saves thereby helping them, rather than himself, into print and prominence. He thus obeys the precepts and follows the example of Henry Bradshaw (1831-86) librarian (bibliothecarius) of the University of Cambridge, England, from 1867 to 1886; this particular office, it may be mentioned, was for three centuries (1278-1577) held by the University chaplain, an arrangement hallowed by ancient tradition and so possibly appropriate as combining the care of the soul with that of the mind, and indeed from the point of view of financial economy, but not from other practical considerations. Librarians

in medical libraries often play a ghostly part in the construction of books and papers.

The number of medical men who have been whole-time librarians of medical libraries is small; but in the United States what may have been lacking in quantity has been more than made good by quality. To three bibliographer-librarians of the Army Medical Library tribute is most justly due, (T. Carlyle), Billings, Fletcher, and Garrison: for, like the history of the world, that of this great library is the biography of its great men.*

THE TREATMENT OF ACUTE INTESTINAL OBSTRUCTION*

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The subject of this address was selected because I regard it as one of our major problems, for the reason that it is essentially a surgical problem and for the reason that it is a clinical problem which offers marked opportunity for improvement in our end results.

Since the dawn of the era of abdominal surgery, a remarkable decrease in the mortality rate of abdominal disasters has occurred. Only in the last five years can any similar improvement be boasted of in the surgery of intestinal obstruction.

In 1888 intestinal obstruction was a major subject of discussion at the meeting of the American Association of Physicians and Surgeons. Two celebrities of that day led the discussion, Dr. Nicholas Senn and Dr. Reginald Fitz, Dr. Senn presenting the surgical aspects and Dr. Fitz the medical views. It was the consensus of the meeting that "when after two days of medical treatment no improvement had resulted, recourse then should be had to surgery". Today it is universally conceded that when the diagnosis is made the patient should be subjected to surgical therapy. Despite this general acknowledgment that surgery is the only rational and possible treatment, the results in acute intestinal obstruction are still at best deplorable.

The trouble is that in a lamentable number of cases our practice does not accord with our theory. It is the late diagnosis due to the failure of the medical man to appreciate and evaluate properly the early warning signs of abdominal pain, vomiting, blocked bowel and audible peristalsis that finally results in an operation which, in most instances, is just a gesture of despair and which operation, unfortunately, in many instances, is performed by an operator who does not appreciate the essential pathology, who is not cognizant of the disturbed physiology and who, as a consequence, fails to appreciate the essential postoperative therapeutic indications.

What, then, are necessary and ultimate factors in the production of an improved mortality rate?

1. Early diagnosis.
2. A simpler clinical classification of the pathology.
3. A therapy in harmony with present day knowledge of the disturbed physiology.

THE EARLY DIAGNOSIS

The conclusion of the whole matter is that the prognosis and rationale of treatment is dependent upon the time element. By that I mean the elapsed time from onset to the institution of surgical treatment. The diagnosis of intestinal obstruction is essentially a clinical problem. The onset and chronological order of symptoms and signs are characteristic: (1) Abdominal pain, colicky in character, followed by (2) vomiting, (3) audible peristalsis, (4) blocked bowel and (5) normal temperature, constitute the five cardinal signs of acute intestinal obstruction. No instruments of precision or refined laboratory methods are required. A clinical thermometer and an enema can are the only indispensables. A carefully taken history and physical examination are fundamental. The very hour of onset is announced. The primary warning sign, colicky pain, is repeated every few minutes and soon followed by vomiting. Woe unto the patient

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*The last portion of Sir Humphry's oration consists of a most interesting biographic sketch of Billings, Fletcher and Garrison. Unfortunately lack of space prevents the publication of these relatively short biographies.

*Read before the Louisiana State Medical Society, Lake Charles, April 27-29, 1936.

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and shame unto the physician when these warning proclamations are silenced by a hypodermic injection of morphine or aggravated by the administration of purgatives. As so well expressed by the late Dr. C. Jeff Miller[1], "Morphine produces a false sense of security on the part of the patient, and puts a screen in front of the signs. Better that the physician busy himself with determining the cause of the pain rather than with its alleviation. This is not always easy. The patient cries out with pain; the anxious relatives demand that something be done. The humane physician is sorely tempted to give morphine but this in one set of circumstances in which nihilism is true wisdom." "Purgatives," as Dr. William D. Haggard[2] well observes, "simply compound the felony of delay." By increasing a peristalsis that is already too active, they serve to augment the distention of an already distended bowel and to increase bacterial activity, while if the stomach, and very properly, refuses to tolerate them, the body, as a result of increased vomiting, is still further depleted of its fluids.

A SIMPLER CLINICAL CLASSIFICATION OF THE PATHOLOGY

One of the most far-reaching advances in the approach to the problem of acute intestinal obstruction has been the recent endeavor of surgical pathologists and surgeons toward a simpler clinical classification. There are so many etiologic factors and so many types to consider pathologically that one becomes bewildered and confused when at the bedside of the individual patient. The point of view is simplification of etiologic factors so that proper treatment immediately suggests itself. Wangensteen[3] has given us such a clinical classification. In it he groups the twenty odd causes of acute intestinal obstruction into four groups.

I. Mechanical Type
- (a) Due to narrowing of lumen
  1. Congenital—atresia.
  2. Acquired—stricture.
- (b) Neoplasm
  1. Of the intestine
  2. By compression from without or within
- (c) Miscellaneous
  1. Gall stones
  2. Foreign bodies.

II. Adhesive Type
- (a) Inflammatory — traumatic
- (b) Congenital

III. Strangulation Type
- (a) Hernia
- (b) Volvulus
- (c) Intussusception
- (d) Vascular lesions
  1. Mesenteric thrombosis
  2. Buerger's disease.

IV. Ileus Nervous Type
- (a) Paralytic—adynamic
- (b) Spastic—dynamic.

Observing this classification, one can readily see how a reasonably accurate inference at the bedside and a more reasonably accurate classification on the operating table can be made and that the means of "mechanical relief" suggests itself in a given case.

THE DISTURBED PHYSIOLOGY

One of the most important aspects of this problem, the study of which has contributed most to a rational therapy and better results, is the knowledge of the disturbed physiology. "Only recently is the view gaining acceptance that the final factors in acute obstruction are usually edema and spasm of the gut. There is ample evidence that the edema and spasm at the site of obstruction accountable for the acute stage need be only temporary, for no other basis can the history of previous obstruction crises with spontaneous recovery or after enterostomy be explained" (Bartlett[4]). Edema and spasm, producing blockage, followed by distention of the intestinal wall and the consequential vascular changes of distention, producing a reverse peristalsis (clinically manifested by vomiting) with the final result of water loss, dechlorination and toxemia, constitute essentially the pathology of acute intestinal obstruction.

A great deal of confusion has existed as to the mechanisms and clinical factors which are responsible for the so-called toxemias associated with intestinal obstruction. Broadly speaking, two main theories of the causative factors in the toxemias have been supported both by clinical observation and animal experimentation. One theory has placed the emphasis upon a toxin or toxins originating in the intestine or in

the intestinal contents above the obstruction (Cannon and Murphy,[5] Whipple and Stone[6]). The other theory has emphasized the chemical and physical changes occurring in the blood and other tissue secondary to vomiting, which is so characteristic of the condition. (Haden and Orr[7], Gatch, Trussler and Ayers[8], Burgess, Walsh and Ivy[9]).

The toxin theory of obstruction toxemia has lately been subordinated to the view that toxic symptoms are explicable in terms of altered salt and water concentration in the blood and other tissues.

The chemical changes which occur in the blood as a result of intestinal obstruction are explicable in terms of the degree of interference with normal reabsorption of digestive secretions. Excessive vomiting removes not only large quantities of water, but also electrolytes, principally chlorides and fixed base. The relative excess of sodium radicals in the blood makes possible retention of more carbon dioxide as bicarbonate and thus accounts for the observed rise in CO_2 combining power of the plasma. As a result also of the vomiting, a large amount of fluid is lost, resulting in concentration of the blood plasma and the interstitial body fluids are drawn upon heavily and the diminution of these fluids is reflected in the dry skin and shrunken subcutaneous tissues (dehydration).

The viscosity of the blood may be so increased that a tenfold reduction in the volume flow may occur. This viscosity must interfere seriously with the respiratory and other functions of the blood, and depress renal activity. Indeed, a consistent finding in obstruction is an increase, up to 1000 per cent, in the blood N. P. N., this increase being chiefly in the urea fraction. It seems certain that this increase in blood N. P. N. is not altogether or mainly a retention phenomenon. Despite the diminished renal function,there is an increase in nitrogen excretion which may be four or five times the normal. These facts are indicative of an intensive increase in tissue destruction. Dehydration of the tissues is the most likely explanation, although the action of some circulating toxic factor is not precluded. Based on this chemistry, a rational therapy has been developed which promises the greatest advance yet attained in intestinal obstruction. I will speak of it as replacement therapy.

The epochal work of Haden and Orr[7] in 1923 showed that the administration of saline solution (NaCl) in simple obstruction could prolong life until death resulted from starvation. It is of particular interest that distilled water alone or solutions of dextrose and salts other than sodium chloride are not effective in preventing dehydration and other typical blood and tissue changes associated with obstruction.

So speaking chemically, reduction in blood chloride, increase in blood N. P. N. and CO_2 combining power are manifestations of intestinal obstruction with vomiting. A knowledge of these chemical factors is necessary for an understanding of the problem and for the direction of intelligent postoperative treatment.

What are the indications for treatment, taking the cases as they come, some early, most late, some too late? There are two general basic principles to be complied with, namely, first, mechanical relief and second, replacement therapy.

The means of mechanical relief include section of bands, resection, enterostomy and cecostomy, and colonic tube drainage, for a long time standardized methods, and recently, suction siphonage (Wangensteen[10]).

Replacement therapy includes the judicious use of sodium chloride, dextrose and water. The type and character of treatment will depend upon: (1) the elapsed time (i. e. from onset to time of rational therapy, operation); (2) the site, upper, middle or lower third obstructions; (3) the nature of the original lesion; (4) the physiologic status of the intestine and finally, (5) the chemical and metabolic status of the patient.

It must be very evident that the successful surgeon must give thought not only to the fact of obstruction, but to its underlying cause and type, its probable duration, with consequential changes in the intestinal wall and the chemical and metabolic status of his patient before he can possibly outline a successful plan of therapy.

Let me here repeat: The essential pathology of acute intestinal obstruction is: Edema and spasm producing blockage, followed by disten-

tion of the intestinal wall and the consequential vascular changes of distention, producing a reverse peristalsis (clinically manifested by vomiting) with the final result of water loss, dechlorination and toxemia.

In combating this pathology, let me call your attention to the advantages of: first, continuous suction siphonage (Wangensteen) of the upper gastrointestinal tract; second, the necessity for controlled replacement therapy during its use; third, the advantages of enterostomy done according to the Witzel technic and, fourth, the value of morphine judiciously used.

The immediate necessity is obviously twofold: first, to empty and to keep continuously empty the obstructed intestine of fluid and gas in order that structural damage to the bowel wall may be avoided, tonus recovered and spasm and edema allowed to subside. In other words, continuous intestinal deflation. Second, the prevention of a fatal chemical derangement by replacement therapy.

The Wangensteen apparatus (suction siphonage) fulfills the first indication beautifully. The continuous administration intravenously of saline solution (NaCl) and glucose fulfills the second. The variation in the amount of NaCl is governed by the plasma chloride needs. Calories are supplied by the glucose, and water balance is maintained.

High obstruction, pyloric, at site of gastrojejunostomy, adynamic ileus and dynamic (spastic) ileus lend themselves beautifully to this type of therapy. Enterostomy (Witzel technic) in low obstruction accomplishes the same purpose in continuous intestinal decompression and prevents structural changes in the gut wall with the additional advantage of the possible introduction of nutriment.

There are cases in which suction siphonage and enterostomy in combination are indicated; particularly is this true in late low obstructions.

As a means of preoperative preparation in late bad risk cases, suction siphonage with replacement therapy has a place, as illustrated by a recent case admitted five days after onset, vomiting intestinal contents, great abdominal distention, pulse 160, subnormal temperature, low blood pressure (90/60), blood chlorides 260, N. P. N. 60, scanty urine with the listless sunken eyes, the facies indicative of approaching dissolution. Strange to relate, within a few hours after the institution of suction siphonage with the Wangensteen apparatus and replacement therapy with hypertonic saline solution, the entire picture was changed. Vomiting ceased, distention was gradually relieved, the temperature rose to normal. The urinary excretion rose to 2000 c. c. daily, the blood chlorides rose to 475, the N. P. N. fell to 30, the pulse rate at the end of five days was 90 and the patient was converted into a safe elective case for operation.

In strangulation types, as hernia, intussusception, volvulus, mesenteric thrombosis, immediate operation is indicated. Relief of strangulation and exteriorization in non-viable types rather than resection is advocated followed by replacement therapy.

As to morphine, it has long been believed and taught by a majority of clinicians that opium and its alkaloids relax gastrointestinal spasm and stop all peristalsis. Today we must forget this age old concept.

As demonstrated by Thomas G. Orr[11] and reported by him "Morphine and related opium derivatives when given hypodermically stimulate the tone, rhythmic contractions and in some degree peristaltic waves of the small intestine for a period of at least six hours". To prevent overdistention of the small intestine, morphine is indicated in the treatment of acute peritonitis, intestinal obstruction and so-called paralytic ileus. The maximum clinical benefits can be obtained only by giving morphine in sufficent dosage to produce continuous narcosis. By maintaining the tone and rhythmic contractions of the small intestine with morphine, distention is controlled and disturbance of the bowel circulation is prevented during the course of the disease until the cause of the bowel distention is overcome by the natural defensive powers of the patient."

These concepts being true, the use of morphine is logical in peritonitis, paralytic ileus and bowel obstruction to prevent overdistention; so its action is synergistic with suction siphonage and enterostomy in maintaining continuous decompression and preventing structural changes in the intestinal wall. In addition to this action on the bowel, morphine relieves pain,

restlessness, apprehenson and the discomfort of thirst, thereby conserving the patient's strength and preventing exhaustion of the kinetic system.

I submit for your consideration the following routine orders in force in the Department of General Surgery at the Memphis General Hospital effective since January 1934, which embodies the ideas expressed in this paper:

Chart 1

ON ADMISSION:

History—physical examination.

Flat x-ray film of abdomen.

Blood—complete count, chlorides, N. P. N. and CO_2—(No delay awaiting reports).

Clinical diagnosis—probable type—mechanical, adhesive, strangulation, nervous—call attending surgeon.

Institution of suction siphonage (Wangensteen).

Administration of morphine (after Wangensteed).

To operating room—if operable.

IF NOT OPERABLE:

Institution of continuous intravenous saline-glucose solution (5 per cent in normal saline) and to operating room when operable.

Operation—anesthetic—spinal—when no positive contraindication.

Coeliotomy—exploratory — determination of type where not detrimental to patient.

Enterostomy—(Witzel technic) in lower one-third obstructions, as near as possible to point of obstruction.

Strangulation type—viable—mechanical relief and enterostomy.

Non-viable—mechanical relief, exteriorization and enterostomy.

POSTOPERATIVE CARE:

1. Continuous suction siphonage with daily estimation of water loss.

2. Continuous intravenous saline-glucose solution 3000 to 5000 c. c. daily checked by daily plasma chloride determination.

3. Daily urinary volume determination.

4. Morphine q. s. q. 4 hours for a period to be determined by the exigencies of the case.

Under this plan of management I present the results in the treatment of 148 cases at the Memphis General Hospital during the past two years (March 1934 to March 1936). The mortality rate was 35.4 percent, comparing very favorably with our past 10 years' statistics.

Chart 2

Year	Race		Sex		Results			
	Black	White	Male	Female	Recovered	Died	Total	Mortality
1923	51	5	34	22	22	34	56	60.70%
1924	30	3	23	10	15	18	33	54.54%
1925	37	10	31	16	23	24	47	51.08%
1926	29	9	25	13	15	23	38	60.50%
1927	39	12	30	21	27	26	53	49.05%
1928	53	10	38	25	31	32	32	50.79%
1929	55	12	48	19	36	31	67	46.26%
1930	47	10	35	22	31	26	57	45.60%
1931	59	18	56	21	42	35	77	45.32%
1932	70	20	62	28	43	47	90	52.22%
Totals	470	109	382	197	285	296	581	50.94%

Chart 2 shows a survey of 581 cases of acute intestinal obstruction in the Memphis General Hospital during the 10-year period, from 1923 to 1933 inclusive, by one of our attending staff, Dr. Morton J. Tendler. The mortality rate is 50.94 per cent—as good or as bad as that of most of the larger clinics for the same period.

I think it fair to state that these statistics are compiled from the services of some sixteen attending surgeons, assisted by a house staff, working in a general charity hospital whose clientele is from the lowest social strata. It is also fair to state that during the pursuit of this

Memphis General Hospital
Cases of Intestinal Obstruction
March 1934—March 1935

Chart 3

Cases	
Recovered	31
Deaths	20
Total	51
Mortality Rate	39%

	Recovered	Deaths
Cases operated	13	16
Cases not operated	18	4
Totals	31	20

Elapsed Time	Recovered	Deaths
4 or more days	3 cases	10 cases
3 days	7 cases	10 cases
2 days	4 cases	0 cases
1 day or less	17 cases	0 cases
Shortest time	5 hours	8 hours
Longest time	11 days	8 days
Average time	2 days	3¼ days

Types	Recovered		Deaths	
Mechanical	None		None	
Vascular	2 cases	Strangulated Inguinal Hernia—48 and 12 hours	1 case	Mesenteric Thrombosis—8 Hours
	1 case	Intussusception—30 hours	2 cases	Strangulated Hernia 24 and 48 Hours. Non-viable —Exteriorization
	1 case	Volvulus—60 hours	1 case	Intussusception—5 Days
Ileus	1 case	48 hrs. Post Appendectomy Op. S. S.: R. T.—4 Days	1 case	5 Yrs.—Admitted with Acute Appendicitis 72 Hrs. Lived 31 Days
			1 case	13 Mos. Ileus After Umbilical Herniotomy. No. S. S. R. T.
Adhesive	22 cases	Post Op. Adhesions	10 cases	Post Op. Adhesions
			2 cases	Congenital Adhesions
Undetermined	4 cases		2 cases	
Totals	31 cases		20 cases	

Chart 3 shows the results in 51 cases during the year 1934 with a mortality rate of 39 per cent.

Memphis General Hospital

Cases of Acute Intestinal Obstruction

1935-1936

Chart 4

Number of Cases			Elapsed Time		
				Recovered	Died
Recovered	66		4 or More Days	14	15
Died	31		3 Days	2	2
Total Cases	97		2 Days	4	8
Mortality Rate	31.9%		1 Day or Less	46	6
	Recovered	Died			
Cases Operated Upon	53	26	Shortest Time	1 Hour	4 Hours
Cases Not Operated Upon	13	5	Longest Time	11 Days	8 Days
	66	31	Average Time	42.6 Hours	63.4 Hours

Clinical Classification (Wangensteen)

Type	Recoveries	Deaths
Mechanical—6	4	2
Vascular—39	31	8
Strangulated Hernia (34)	(30)	(4)
Volvulus (2)		(2)
Intussusception (2)	(1)	(1)
Mes-Thrombosis (1)		(1)
Adhesive—45	28	17
Post-Operative (23)	(16)	(7)
Inflammatory (20)	(10)	(20)
Terminal Ileitis (1)	(1)	
Tuberculous Peritonitis (1)	(1)	
Paralytic Ileus—4	3	1
Undetermined—3	0	3
Totals—97	66	31

Two Years 148 Cases—Mortality Rate 35.4%

Chart 4 shows the results in 97 cases during the year 1935 with a mortality rate of 31.9 per cent.

clinical problem there were varying degrees of enthusiasm and surgical acumen exhibited. We believe, however, that these statistics show fairly accurately the result of the application of these principles in the hands of the average surgeon.

Private Series
Acute Intestinal Obstruction
March 1934—March 1936
Chart 5

Number of Cases

Recovered	26
Deaths	1
Total	27
Mortality Rate	3.7%

	Recovered	Deaths
Cases Operated Upon	16	1
Cases Not Operated Upon	10	0
Totals	26	1

Elapsed Time

	Recovered	Deaths
4 or More Days	0	1
3 Days	3	0
2 Days	4	0
1 Day or Less	19	0
Shortest Time	1 Hour	
Longest Time	72 Hours	7 Days
Average Time	24 Hours	7 Days

Clinical Classification

Type	No.	Recoveries	Deaths
Mechanical	0	0	0
Vascular	3	3	0
Ileus	10	10	0
Adhesive	14	13	1
Undetermined	0	0	0
Total	27	26	1

Chart 5 shows a small series of 27 private cases during the years 1934 and 1935 with a mortality rate of 3.7 per cent.

This low mortality rate is the result of several factors, namely, a more intelligent clientele seeking relief earlier—hence an earlier diagnosis; secondly, the prompt application of a therapy in harmony with present day knowledge of the disturbed physiology by a small group willing to apply with meticulous care the principles outlined in this paper.

SUMMARY

This paper consists of a consideration of the problem of acute intestinal obstruction from the standpoint of its early diagnosis, a more simplified classification and its altered physiology. In accordance with these concepts, an outline of the treatment of the condition is presented which has been followed by the author and his associates at the Memphis General Hospital and by the author in his private practice since 1934. Statistics are presented of 581 cases at the Memphis General Hospital from the years 1923 to 1933 inclusive and compared with statistics of 148 cases at the same institution and 27 cases in private practice, during the years 1934 and 1935. The mortality rates of the latter two groups were 35.4 per cent and 3.7 per cent respectively, which two figures are encouraging and appear to be due to the institution of a therapy more in keeping with the pathology

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DISCUSSION

Dr. C. P. Gray, Sr. (Monroe): It is to such men as Dr. McGehee that men like myself are indebted. Not having a service at a large hospital, it goes without saying that my remarks will have to be limited to observation and study in private cases, from study of the surgical literature and by following such a series of cases as has been reported here by Dr. McGehee. However there are several points I would like to call attention to and to lay stress upon some of these.

First, I would like to call your attention to the time and study being given intestinal obstruction

by the many workers, as is so clearly demonstrated by a hurried survey of the surgical literature of today. Almost monthly one can find new articles in the outstanding surgical journals on intestinal obstruction. This evidence of renewed interest and study, especially since the chemical derangement of the blood in these conditions is being understood, clearly demonstrates that there is yet much to learn about this condition.

Second, one of the first and most important considerations to give to any case of intestinal obstruction is the duration of the symptoms; next, whether the obstruction is high or low in the intestinal canal. The success of whatever plan of treatment is decided upon, will depend to a great extent upon these factors, especially is this true in the high obstruction, where the loss of essential secretions is rapid and prolonged.

In addition to the factors just mentioned, plus the loss of chlorides, there are other factors to be considered as Dr. McGehee has so well brought out. For instance the changes in the intestinal wall itself and the disturbed circulation in the intestine as a result of overdistention. I was much impressed by the remarks of Dr. McGehee along these lines.

We all recognize the importance of replacement therapy in intestinal obstruction, as so clearly put before us, and what it has done to reduce the mortality in this condition. However it seems that since the chemical derangement which takes place in intestinal obstruction is fairly well understood, and is largely corrected by the replacement therapy with chlorides, that the mortality should be reduced still more. When we consider this we are forced to the conclusion that there are other lethal factors to contend with, for instance the toxine or toxemia mentioned by Dr. McGehee. When all of these lethal factors are determined the mortality in this condition will be reduced still more.

There can be no doubt but that the deferred operation with the continued emptying of the intestine by suction and the replacement therapy, has saved hundreds of lives. Many of these patients, in the absence of a complete obstruction or strangulation, will recover from this plan alone. In others, they can with safety be brought to within a period of safe operability.

Dr. James T. Nix (New Orleans): First, I want to express my appreciation for the deep gratitude I feel in discussing the paper of one of the foremost leaders of the United States and the South, and in collaborating with a man who is one of nature's noblemen and Louisiana's sons. I am deeply grateful for this opportunity.

There is nothing I could say in discussion of this paper that will do more than lengthen the subject. However, I would like to present a few slides which, in my opinion, will be a practical illustration of the points the doctor has brought out, cases that I have had in my own personal experience during the past year at the private hospital in which my work is done, Hotel Dieu, New Orleans.

(Slide) The doctor described mechanical obstruction. The patient came in with acute mechanical obstruction and classical symptoms. She was sent to the roentgen ray department and the picture shows stasis with marked distention and small bowel obstruction. The Wangansteen decompression was instituted at once and operative interference prevented. At the end of a year, just a few weeks ago, she came back to the hospital with recurrence of the same symptoms. She again was given the same treatment with equally successful results.

(Slide) This represents the treatment we carry out. This is just a one-gallon bottle reversed, with a two-way stopper. One tube is attached to a nasal catheter that goes into the duodenum, and the other tube comes down to an empty bottle. The gallon jar is filled with water, and the flow is determined by the pet cock. You can get it to run at the rate of thirty or forty drops a minutes, or whatever is desired. It may take three or four hours to empty the bottle. The Vacoliter Bottle prepared by the Baxter Company is a great addition to intravenous therapy. We have used it 1,500 to 2,000 times, I am sure, without reaction, which is very unusual and which I believe is because the solutions are exceptionally well prepared. In most of our cases we use glucose solution in saline, depending on the chemistry of the patient.

(Slide) I think you can see very well in this case the distended loops of small bowel, the herring bone effect with striations, and the stepladder appearance of the small bowel. The patient was too ill to have vertical pictures, showing the various fluid levels, (slide) but she was placed on her side and a lateral picture was taken. You can see the fluid levels. The patient was given the same treatment. This was a case of intestinal obstruction following a simple laparotomy. On re-opening the abdomen there were found intestinal adhesions and a large quantity of serosanguineous exudate, not purulent. Enterostomy was done, including Wangansteen suction and intravenous replacement therapy. The patient made a nice recovery. (Slide) This shows the one-gallon bottle in use. The stopper is held with adhesive. This is a photograph of the patient just described.

(Slide) This patient was very obese. This is a lateral view of the patient. A. P. picture was very poor because of the large amount of abdominal fat. You can see loops of greatly distended small bowel. The symptoms were those of classical obstruction. The patient was operated and was found to have mesenteric thrombosis with eight inches of gangrenous bowel. The patient was in

extremely poor condition. The bowel was laid on the abdomen, the healthy loops approximated and were later brought together. The patient made a very nice recovery.

(Slide) This is another case of intestinal obstruction where most of the pathology was on the right side. You can see it in the roentgen ray. You easily recognize loops of distended bowel and multiple fluid levels. The picture is a flat plate, A. P. view. (Slide) This is a picture of the same patient in the vertical position, showing three definite fluid levels. This patient had a large ovarian chocolate cyst about eight by six which had ruptured into the abdominal cavity with resultant intestinal obstruction. The ovary was removed, standard treatment instituted and a smooth recovery followed.

(Slide) This is a most unusual case. I did not think this old lady had much of a chance. She was 65 years of age and had had arterial hypertension over a good many years. The gallbladder became gangrenous and sloughed off, bile pouring out into the abdominal cavity. She was operated on. We could not do anything to the gallbladder except to drain the gallbladder area. The pelvis was full of bile. She was put in a sitting position and the pelvis drained. Enterostomy was done and treatment instituted as previously recommended. She made an uneventful recovery: (Slide) showing the fluid levels, and the herring bone or stepladder effect as brought out by the roentgen ray pictures.

(Slide) Picture of the patient taken a few days ago. She is still in the hospital.

When a case of acute intestinal obstruction enters the hospital in the middle of the night, it is just as much an emergency for the roentgen ray man as for anybody else and pictures should be taken at once.

Dr. J. L. McGehee (Memphis, Tenn.): I wish to thank Dr. Gray and Dr. Nix for their very kind discussion.

I really believe we are on the right track in our efforts to improve the mortality rate in acute intestinal obstruction. In large general hospitals, such as Charity Hospital in New Orleans, the Memphis General Hospital, and the general hospitals of other large cities, there will always be a certain percentage of patients admitted who are moribund, but I really believe in the care of private patients of the better social strata who seek relief early and diagnosis can be made early, the mortality rate of acute intestinal obstruction can certainly be reduced to the place Dr. Deever said many years ago it should be, to less than 10 per cent.

I felt a little presumptuous in putting my private series of only 27 cases on the screen, but I did it to emphasize the idea that the different types of patients will give a different percentage in the mortality rate. Notwithstanding this new idea of continuous suction siphonage and replacement therapy, which prevent chemical derangement, which we now think is the cause of death, the time element must not be lost sight of. Early diagnosis is still the key to an improved mortality rate.

Again, I wish to express my thanks and appreciation for the courtesies that have been extended me, and to say to you that I have enjoyed myself throughout the entire meeting and hope that I can come back again some time.

THE USE OF EPIDURAL ANESTHESIA IN GENERAL SURGERY*

CHARLES B. ODOM, M. D.†

NEW ORLEANS

Since the discovery of the anesthetic properties of ether by Crawford W. Long, 1842, there has been a constant search for the ideal anesthetic, and the ideal means of administering it. I do not believe we have as yet attained this goal, but we have gone quite a distance in that direction. At present it is well recognized that in choosing the anesthetic for any operative procedure the individual case must be considered. There are at present dangers in any known type of anesthesia, and the doctor's problem is to determine which is least hazardous for his patient. A secondary point which must also be considered is which anesthetic will be best from the surgeon's point of view, that is in regard to muscular relaxation and ease of administration.

A type of anesthesia which most closely combines these important factors has been used a great deal in Europe and South America for the past four years with excellent results. It is known as epidural anesthesia, deriving its name from the space into which the anesthetic solution is injected. With epidural it is possible through a single puncture to produce an analgesia sufficient to carry out any type of operation below the chin without entering the subarachnoid space. During the past seven months I have used this type of anesthesia in over two hundred and fifty cases, embracing a wide variety of operative procedures, with very gratifying results. My observations in the first one hundred cases I reported this past No-

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*Read before the Louisiana State Medical Society, Lake Charles, April 27-29, 1936.

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vember, and since broadening my experience I am more enthusiastic than ever about the method.

The idea of injecting anesthetic solution into the epidural space was first conceived by Corning in 1885 but he abandoned work along these lines to devote his time to the study and perfection of subarachnoid or spinal anesthesia. Then in 1901 Cathelin blocked the last sacral and coccygeal nerves by injecting anesthetic solution into the sacral canal through the sacral hiatus. This was a type of epidural anesthesia, and was perfected by Lawen in 1910 for use in gynecology and obstetrics. However, its usefulness is more or less limited to the perineum. Since 1910 numerous men including Schlimpert, Krönig, Kehrer, Hamecourt and Schneider have tried to obtain abdominal anesthesia by injecting large quantities of anesthetic solution through the sacral hiatus with the patient in Trendenlenburg position. In general the results have not been satisfactory for two outstanding reasons, first because of anatomical defects in the sacral canal and second in some individuals, particularly the obese, it is extremely hard to tell when one is in the sacral canal.

It was not until November 1920, when a young Spanish surgeon, Fidel Pagés, conceived the idea of puncturing the epidural space in the lumbar region that epidural anesthesia became useful in abdominal and thoracic surgery. Unfortunately the career of this enterprising young man was cut short by an untimely death from pneumonia. For ten years there was no mention in the literature of this type of anesthesia. Then in 1931 Dogliotti reported before the Italian Surgical Congress in Turin the discovery of a new type of anesthesia for which he claimed authorship. Upon comparing the reports of Pagés and Dogliotti one is struck by their marked similiarity. However Dogliotti does not mention Pagés and I am sure he did not know of his work. The following year Dogliotti came to this country and reported his results before the American Congress of Anesthetists. The method did not gain favor in this country and it is my opinion that at least one of the reasons was that the method described by Dogliotti of localizing the epidural space was blind and considered by many to be dangerous. This method I shall describe later to contrast it with the method we now use.

In 1927, five years before Dogliotti reported his work, Heldt and Maloney of Henry Ford Hospital in experiments attempting to show the cause of postlumbar puncture headaches, discovered that a negative pressure existed in the epidural space. This discovery, although it may be the cause, has proved of little value in the prevention of headaches following lumbar puncture. However, the fact that a negative pressure does exist in this space has proved of value in epidural anesthesia.

The first man to recognize the usefulness of this negative pressure was Alberto Gutierrez of Buenos Aires. He devised a spinal needle with a concave top so that when the stylet was removed the top would hold a drop of water. He engaged the spinal needle in the interspinous ligament and then removed the stylet and filled the top with water. He noticed that if the needle was slowly introduced through the interspinous ligament that the moment the tip emerged into the epidural space the water was sucked into the needle. This he called "the sign of the drop", and is conclusive evidence that the needle is in the epidural space.

This past summer I visited Buenos Aires and while there I met Dr. Gutierrez. On his service at the Spanish Hospital I saw this type of anesthesia used for the first time. Upon my return to this country I reviewed the available literature on the subject and after convincing myself of its safety began using it. I have this month received a communication from Dr. Gutierrez and he is more enthusiastic then ever about the method. He has used epidural in over 3000 cases and prefers it to any other method of anesthesia. In my work I have followed essentially the method of Gutierrez. I have reviewed the anatomy in a previous article[14] and have listed materials necessary.

ANESTHETIC

In my first series of cases I used a 2 per cent solution of novocaine to which 1 c.c. of adrenalin was added to prolong the anesthesia. I saw several cases with minor reactions, such as pallor of the face and complaints of dizziness, which I think were due to the adrenalin. Following the discontinuance of this drug these

reactions ceased. In operations which are not to last more than one hour it is possible to use a 2 per cent solution of novocaine without adrenalin. In these cases we used the following amounts: 35 c.c. for inguinal herniaplasties, appendectomines, and lower limb operations; 45 c.c. for gynecological surgery; 50 c.c. for upper abdominal procedures such as cholecystectomy, and gastric surgery.

If there is a possibility that the operative procedure may last more than an hour I have found it advisable to combine pontocaine solution with the novocaine solution. This combination has proved extremely satisfactory and will give an anesthesia lasting from one and a half to two hours. As far as we know this is the first time a combination of this sort has been used in this type of anesthesia. In 50 c.c. of normal saline 500 mg. of novocaine crystals and 100 mg. of pontocaine crystals are dissolved. The resulting 50 c.c. solution has a concentration of 1 per cent novocaine and 0.2 per cent pontocaine. This combination has been used in over 100 cases and not a single patient showed evidence of a reaction of any sort. All solutions used at the present time are made up in the operating room, just before injecting, by dissolving sterile crystals in normal saline solution. This insures a fresh solution of exact concentration. Adrenalin is no longer used.

The objection has been raised that one gram of novocaine, which is the amount in 50 c.c. of 2 per cent solution, is a very large dose of this drug. H. Braun, who is responsible for the standardization of practically all methods used in local anesthesia, gives two grams of novocaine as the dosage which should not be exceeded. If this is true certainly half that amount is within safe bounds. I have seen a much larger quantity of novocaine used in local infiltration and splanchnic block with no ill effects. Dogliotti and Caporale report using a 2.5 per cent solution of this drug in a long series of cases with excellent results. Peham and Americh use 1.2 grams to 1.5 grams of novocaine in their high sacral anesthesia and report no evidence of over dosage.

TECHNIC

With the solution prepared and the sterile equipment on hand the patient is placed on one side. This side on which the incision is to be made is always placed down to take advantage of the gravitation of more of the anesthetic solution to that side. The body is brought to the edge of the operating table with the back bowed out, the knees and thighs are flexed, and the head is brought downward. The arching of the back and consequent stretching of the spinal canal causes an increase in the negative pressure of the epidural space. The shoulders and hips should be in a vertical line for tilting of either results in the "corkscrew spine" and makes puncture difficult. If the operator is accustomed to the patient sitting up the puncture may be carried out just as well in that position. The lower back is then cleansed with ether and tincture of merthiolate. The second lumbar interspace is located by palpation and marked with the thumbnail. At this site, using the 2 c.c. hypodermic syringe, an intracutaneous injection of a small quantity of novocaine solution is performed. Through this wheal the 20 gauge spinal needle is then introduced until its tip is well engaged in the interspinous ligament. The stylet is then withdrawn and the small glass indicator filled with solution is connected to the spinal needle. This glass indicator is made from the glass adapters commonly used to connect rubber tubing to infusion needles. It was first used to facilitate the localization of the epidural space by the negative pressure method. It is just as accurate and far less cumbersome than the use of the U manometer which is advised by some European surgeons.

With the glass indicator in place the spinal needle is slowly pushed through the interspinous ligament. At the point where the needle punctures the yellow ligament a snap is felt and the point of the needle enters the epidural space, at this same instant the fluid in the indicator will be sucked into the needle due to the negative pressure in the epidural space. This is conclusive evidence that the tip of the needle is in the epidural space and the anesthetic solution can be injected with ease and safety.

At this point I think it is well to outline Dogliotti's method of "lack of resistance" to contrast it to the negative pressure method of localizing the epidural space. As soon as the

spinal needle is engaged in the interspinous ligament the stylet is removed and the 20 c.c. syringe filled with anesthetic solution is attached to the needle. As one hand slowly moves the needle inward through the interspinous ligament the other hand holds the syringe with the thumb on the piston exerting constant pressure. While the needle tip is in the ligament it is impossible to inject the smallest quantity of solution because of the compactness of this structure. The moment the needle punctures the epidural space the resistance is released and the plunger moves downward with ease. The danger here is that the needle may have punctured the dura and there is the possibility of the fluid being injected into the subarachnoid space.

As I have stated we use the negative pressure method of localizing the space and consider it safer. With the spinal needle definitely in the epidural space the 20 c.c. syringe is connected to the needle and 10 c.c. of the anesthetic solution is slowly injected. The fluid flows in freely with as little resistance as in intravenous injections. A period of five minutes is then allowed to elapse. This precaution is carried out to obviate completely the possibility of an accident from subdural injection of the solution. If, after this time has elapsed, there is no numbness of the lower extremities and the patient can move them one can be sure the needle is not in the subarachnoid space and can proceed to inject the remainder of the solution. If the 10 c.c. of solution has been accidently given into the subarachnoid space an ordinary spinal anesthesia will result. We have found that the injection of the solution in stages of 15 to 20 c.c., allowing a short time between each stage for the diffusion of the solution, is most satisfactory.

Following the injection of the solution the patient lies flat upon the table. If the operation to be performed is in the pelvis or lower extremities the patient is placed in Fowler's position to facilitate the gravitation of the solution downward and blockage of the sacrococcygeal nerves; a slight degree of Fowler's position is also indicated in inguinal hernias and appendectomies to prevent the upward diffusion of the anesthetic. On the other hand a slight Trendelenberg position should be used where anesthesia of the upper abdomen and chest is desired. In kidney operations the patient should lie with the side on which the operation is to be performed down for fifteen minutes to get the greater amount of solution to gravitate to that side. Gutierrez in his last communication states that he "no longer considers the Trendelenberg position necessary to obtain upper abdominal anesthesia."

Some men, including Pagés and Dogliotti, attempt to obtain a segmental anesthesia by injecting the solution into the epidural space in the region of the nerves supplying the segment of the body in which the operation is to be performed. This is technically more difficult and one is more likely to get incomplete anesthesia. The second lumbar interspace is the most desirable site for puncture for reasons which I have already outlined[14] and where I have also indicated the correct management of the patient.

The operations included a wide variety of procedures. It is possible to carry out almost any operative procedure below the chin with this type of anesthesia. Many of these cases were emergencies, and a number of the patients were extremely poor risks. In my first series the percentage of incomplete anesthesias was 9 percent. This has been reduced in the last hundred and fifty cases to 6 percent. Gutierrez states that at present his failures are less than 1 per cent. He is thoroughly convinced that all failures of this type of anesthesia are due to faulty technic.

I had only one case in the series which reacted poorly to the anesthetic: that of a negro male 53 years of age who had a ruptured appendix with abscess formation in the right lower quadrant. He was very emaciated and had been vomiting for a week. Seven minutes after injecting the anesthetic the patient went into shock. He was given adrenalin and artificial respiration and after fifteen minutes began to show signs of recovery. In thirty minutes he had completely recovered and appeared to be in as good condition as upon his admission to the operating room. However, because he had reacted to the anesthetic so poorly it was decided best not to operate upon him. He was

returned to the ward and treated conservatively, using Ochsner's technic. He completely recovered and in two weeks was discharged from the hospital. As to the cause of this accident I feel that I gave at least part of the 50 c.c. of 2 per cent novocaine intradurally. It was my tenth case and up to that time I had not taken that precaution of waiting five minutes after the injection of the first 10 c.c. of the solution. The only other explanation I can offer is that it is possible this patient was hypersensitive to novocaine or adrenalin. Gutierrez, in his series of 3000 cases, reports two fatalities; both were in people over sixty years of age. One case had a mitral stenosis and the other a marked cardiac arrhythmia. In either case it is possible that the anesthetic was not at fault.

BLOOD PRESSURE CHANGES

The blood pressure changes are relatively slight in this type of anesthesia and one of its advantages. In those cases where the extent of the anesthesia is limited to the abdomen there is little or no fall in the blood pressure. Where the anesthesia extended up onto the chest and neck the fall in pressure was gradual and at the end of twenty minutes, when anesthesia was complete, varied from 20 to 30 mm. systolic and 10 to 20 mm. diastolic. In none of the cases in the series, except the accident described above, was the fall in pressure to such an extent as to cause the patient discomfort or worry about his well being. The pulse remained regular and full and there usually was a slight increase in rate when the peritoneum was opened. Occasionally the respiration was deeper and slower than normal.

During the operation the patients as a rule are comfortable. Only seven cases complained of nausea and four of these vomited a small amount. In six cases the patients were highly excitable and apprehensive and complained of a sensation of pulling when the viscera were handled. In all six cases there was complete relaxation of the abdominal wall and a first degree gas anesthesia was sufficient to carry out the operative procedure. All the patients in this series retained the ability to some extent to move their legs in spite of sensory anesthesia. The motor nerves seemed to be affected only slightly if at all. This we have been unable to explain on an anatomical basis and is probably due to a selective action of the novocaine on the sensory nerve roots. This fact explains why the phrenic and intercostal nerves are not affected in those cases in which the Trendelenburg position is used and the anesthesia spreads up to the chin. Several patients in this series exhibited anesthesia to this height and were not in the least uncomfortable, nor was their respiration in any way impaired.

Postoperatively these patients were far more comfortable than in any other type of anesthesia. There was no nausea or vomiting. Headache and neck pains which one encounters so often in spinal anesthesia do not occur. One of the outstanding things noted postoperatively was the ability of the patients to void voluntarily. Few cases in the series required catheterization.

ADVANTAGES AND DISADVANTAGES OF EPIDURAL ANESTHESIA

From observations in this series I feel that epidural anesthesia is definitely the anesthesia of choice in a number of conditions. Outstanding in this group are those cases which are already severely shocked and therefore should be spared as much additional shock from the anesthetic as possible. Under this heading I would include cases of ruptured ectopic pregnancies, ruptured peptic ulcers, placenta previa where cesarean is indicated, and gunshot wounds of the abdomen where the patient is not intoxicated. Another group in which I think epidural is indicated are those cases having such pulmonary complications as tuberculosis and bronchitis, and those cases having such cardiac complications as extreme arteriosclerosis and myocardial degeneration.

A group in which epidural anesthesia is definitely contraindicated are neurotic, highly excitable individuals. Patients desirous of being asleep during the operation should be given a general anesthetic unless there is some definite contraindication. Epidural should not be used in intoxicated patients as it has been shown these cases do not tolerate novocaine very well.

When epidural anesthesia is compared to other types of anesthesia its advantages are readily seen. It has all the advantages of

spinal anesthesia without many of its undesirable features. There is no danger of injuring the cord for the dura is not punctured, bulbar accidents cannot occur because the anesthetic solution cannot reach the medulla, spinal anesthesia affects the central nervous system while epidural blocks only the nerve roots; since the dura is not pierced there is no danger of a meninigitis or encephalitis; blood pressure changes are less marked than in spinal; a longer anesthesia can be obtained with epidural than with spinal; patients are more comfortable and vomit less often than in spinal, and post-operatively the patients do not have post lumbar puncture headaches and in general are far more comfortable.

When compared to general anesthesia it is less toxic and the patients are more comfortable post-operatively. A well trained, skilled anesthetist is necessary to give a good general anesthetic, while epidural can be given by the surgeon. In many cases where pulomnary and cardiac conditions exist general anesthesia is definitely contraindicated and these patients can take epidural with safety.

CONCLUSIONS

1. Epidural anesthesia should be part of the armamentarium of every general surgeon.

2. Although there are dangers in its administration, using correct technic it is the safest method of anesthesia now in use.

3. Post-operatively these patients are more comfortable than after any other anesthetic.

4. A combination of novocaine and pontocaine solution is well tolerated in this type of anesthesia and will give an analgesia of one and a half to two hours' duration.

5. The negative pressure method is the safest and most accurate means of localizing the epidural space.

6. There is a definite selectivity of the sensory nerves over the motor nerves in this type of anesthesia.

7. Epidural anesthesia has not been given the attention in this country that it deserves.

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DISCUSSION

Dr. A. S. Hamilton (New Orleans): Dr. Odom's excellent paper should stimulate anew our interest in epidural anesthesia. He has presented the salient facts so well that I can only emphasize a few of them, particularly as applied to the treatment of fractures.

First, the importance of adequate pre-anesthetic medication cannot be emphasized too strongly. Aside from the absolute failure of the anesthetic, our worst complications have resulted from apprehension on the part of the patient. Only those who were not adequately prepared have manifested such reactions as laryngeal spasm, trismus, generalized muscular rigidity and hyperpnea. We do not feel that these symptoms result from the novocain injected, but are part of a psychic disturbance.

Second, it has been my experience that it is not advisable to decrease the amount of solution injected. It is possible to obtain excellent anesthesia in the lower extremities with as little as 400 milligrams of novocain, but the volume of the solution should be 30 c.c. or more. Using from 15 to 25 c. c. of solution, my failures were nearly fifty per cent.

Third, in order to take full advantage of the drug injected, I have found it advisable to keep the patient lying on the affected side for the full twenty or twenty-five minute period before the full effect of the anesthetic is noted. In this way one frequently observes an excellent analgesia of one leg while the other retains its full sensibility.

Fourth, Cannon's work offers a possible explanation for the course of the blood pressure reading during this type of analgesia. He has shown that sympathetic section results in a slight temporary fall, followed by a return to normal. Dr. Odom's

injections with lipiodol show that the solution injected epidurally invades the nerve sheaths sufficiently to bathe the sympathetic rami in the anesthetic solution. Therefore, we might expect to see a temporary fall in the blood pressure, followed by a return to normal, which is exactly our clinical observation. While I have used epidural anesthesia only on colored patients, other members of the Charity Hospital staff have noted the close resemblance of the skin of white patients anesthetized in this manner to those who have had sympathetic block or section.

Dr. T. B. Sellers (New Orleans): Inasmuch as I have never used epidural anesthesia, my remarks necessarily will deal with generalities and with an explanation of why I have not employed it.

For many years I have used professional anesthetists not only in giving inhalation anesthesia, but also in administering spinal and regional block. One who is doing this work daily is more dextrous, therefore the anesthetic is safer and more effective. If any complication should arise, the surgeon is relieved of all responsibility concerning the anesthetic and can give his entire attention to completing the operative procedure. Not infrequently, in all types of regional block, including epidural, the anesthesia is either inadequate or the operation is longer than was originally anticipated; in such cases the trained anesthetist can supplement regional with inhalation anesthesia.

Dr. Odom is to be congratulated on bringing to our attention another type of anesthesia, first used about half a century ago, but like many other valuable procedures more or less dormant through the years. It was used again about thirty-five years later and has gradually gained popularity up to the present time, due probably to the manufacture of less toxic drugs in recent years and to the development of a more accurate technic in administration of epidural, thus making the procedure safer and more effective.

It is doubtful that epidural will replace other accepted methods of local and general anesthesia, but it will probably prove of inestimable value in making surgery possible in a certain group of cases in which it has been hazardous. In future years, Dr. Odom will be known as the first man in the South to use epidural anesthesia, and his original work and technic will redound to his honor.

To determine the relative safety of epidural would necessitate a large series of cases, as statistics show that with ether the mortality is only one in ten thousand cases in expert hands. Also, in stating that a procedure is safe and simple, we must remember that the originator of any procedure usually develops refinements of technic which are seldom duplicated by the profession at large. Safety and simplicity are therefore relative matters, being dependent upon the dexterity of the operator.

At a meeting of the New Orleans Gynecological and Obstetrical Society, Dr. Graffagnino reported a case of a near fatality with epidural anesthesia which demonstrates even in the hands of an expert the possible danger of this method of anesthesia. Those of us who wish to try epidural should remember that in inexperienced hands this danger is multiplied many times. Even if epidural should prove to be a safer procedure than inhalation anesthesia, the time element would still be a factor. Dr. Philip Carter stated that it takes about forty-five minutes from the time the anesthetic is started before operation can be undertaken.

Dr. James E. Walsworth (Monroe): This is one of the most important subjects that has been presented before this Society at this meeting. I am reminded of an efficiency expert who was discussing the work of the surgeons, and he said that of all the arts practiced by men, the average surgeon was the poorest equipped mechanically to carry out his service, and yet it is the life saving art of all. In discussing the anesthetic proposition, you know Doctor Koster of Brooklyn uses spinal anesthesia for everything at times, from the sole of the foot to the top of the head. He has several thousand cases of spinal anesthesia, and using the Labat method he teaches that it is eminently safe. Other men are not capable of following the refined technic as taught by Dr. Labat, and they get in trouble.

In the Royal Infirmary in Edinburgh, I had the pleasure of being associated with Dr. White who, in 1930, presented a paper on a neurologic subject at the Philadelphia meeting of the American College of Surgeons. He was bemoaning the fact that chloroform anesthesia was now a lost art, and he was using chloroform anesthesia in the Royal Infirmary in Edinburgh at that time, going back to the old regime, claiming it was, when properly administered, the safest and most pleasant anesthetic drug for the patient.

All of you remember the great popularity that the method of controllable spinal anesthesia had a few years ago, which I believe, at this time, has certainly lost much of its popularity. I wish all of you could get the personal appraisal of this method by the various English surgeons—in that country, as I understand, the Pitkins formula was allegedly originally introduced.

Medical men, surgeons, and the public alike often permit themselves to become a part of programs that vary with their experience in the popularity of the subject matter. However, if the science of medicine and surgery has taught doctors anything, it has taught us the necessity of keeping an open mind, and we should appreciate the presentation of a comparatively new technic by Dr. Odom to

the Surgical Section of the Louisiana State Medical Society.

Dr. Peter Graffagnino (New Orleans): I am sorry time will not permit me to discuss this paper at length. However, I want to say I am happy to know I have had a part in the development of this anesthesia in New Orleans. I feel our efforts have been amply repaid in encouraging Dr. Odom in this line of work, and have placed our material at his disposal.

I think this method is one of great importance and that when the technic is developed it will have a definite and fixed place in surgical, gynecological and obstetrical anesthesia. In the near future we will present a series of obstetrical cases wherein we have used this method. I believe the most dramatic effects with this method of anesthesia are obtained in the surgical procedures of obstetrics.

Dr. Roland Young (Covington): In regard to the patient's behavior, some eight years ago the Journal of the American Medical Association in quite a number of its articles, brought out very clearly the necessity of a little help from the neuropsychiatrist, and suggested that just as the urine was examined before an operation perhaps it would be advisable for a neuropsychiatrist to see the patient. The patient may fear going to sleep just as he may fear not going to sleep. I believe if the neuropsychiatrist knows his business, he can give the surgeon a little help and certainly render the patient valuable aid. An understanding of the Freudian concept I believe to be often necessary in doing this type of work.

Often the patient is psychoneurotic and occasionally one is met with who has even a mild psychosis and this is not appreciated or known by the attending surgeon and anesthetist.

Dr. Charles B. Odom (In conclusion): The interest and attention that everyone has shown here today is indeed gratifying and it is certainly appreciated. Those who discussed my paper were more than kind with their remarks.

In weighing the merits of epidural anesthesia, one should remember that there is at present no ideal method of anesthesia and even drip ether which is so widely used has its dangers, for I have recently seen two deaths result from improper administration. It is in the poor operative risk case that epidural anesthesia is especially indicated. We have been able to offer more and more patients in this group safer operative procedures. The results in upper abdominal work have been particularly gratifying.

The final point which I wish to stress is that epidural is relatively easy to administer and in careful hands is probably the safest method of anesthesia now in use.

THE ROLE OF LACTOBACILLUS ACIDOPHILUS IN THE TREATMENT OF DISORDERS OF THE DIGESTIVE TRACT

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Almost four decades have elapsed since Moro[1] first discovered the Lactobacillus acidophilus, and established the fact of its important role in suppressing proteolytic fermentation in the human digestive tract. From the Biblical Patriarch Moses, who prescribed for the children of Israel in their wandering in the wilderness, "Soured milk of kine and goats milk with fat of lambs and rams of the breed of Bashan, as the food provided by Jehovah," to Metchnikoff who saw in copious consumption of buttermilk the means of prolonging life indefinitely, the therapeutic value of sour milk has intrigued the physician, the pathologist, and bacteriologist alike.

Metchnikoff[2] appears to have been among the first to have publicized through the written word the advantages of a buttermilk diet, which tribes of primitive natives of Africa and those of Asiatic Russia and of Armenia had for untold centuries been practicing. In his writings during the first decade of the present century he pronounced as the summum bonum of human health, a healthy intestinal flora, and attributed the unusual longevity of the inhabitants of the Balkan Peninsula to their general and prodigious consumption of yoghurt* milk.

From this yoghurt milk of the Balkans, Metchnikoff next isolated the predominant species of lactic acid bacteria occurring therein which was found to be Lactobacillus bulgaricus, and from this time to date lactobacillus therapy has been occupying the attention of the physician and medical scientist, with unabated progress.

The attainment of Metchnikoff's summum bonum however, was not so readily achieved by bulgaricus therapy, and though his colleague at the Pasteur Institute in Paris, Cohendy,[3] had obtained clinical data supporting the theory of the benign role of the L. bulgaricus when in-

*Also spelled yoguet and yohourt.

gested in milk, and though another of his colleagues, Belonovsky, experimented entensively on mice as experimental animals, their results when subjected to a critical study, show only in rare instances the colonization ability of the organism under consideration.

As unconvincing as were the data obtained by Metchnikoff and his coworkers in support of their theory of the effectiveness of L. bulgaricus ingestion in suppressing putrefaction in the human digestive tract, the work of those who attempted to invalidate his findings were, if anything, less trustworthy. In this category we have the work of Leurssen and Kuhn,[4] of Ohler,[5] Severin,[6] Distaso[7] and Schiller, Kulka,[8] and Herter and Kendall.[9]

It is in the work of the American Rahe[10] in 1915, that we find the first completely adequate appraisal of the L. bulgaricus therapy and the first study in which the experimental procedure was entirely trustworthy. The results of Rahe's studies conclusively proved that L. bulgaricus rarely survives more than a very short period in the digestive tract after the feeding of it to the patient is discontinued. While the extensive investigations of the role of L. bulgaricus, in correction of putrefactive changes in the digestive tract, did not substantiate the earlier claims for it, they did give a great impetus to the study of the underlying causes of these changes, and the conditions predisposing thereto.

It was but a natural sequence therefore that attention was next directed to the influence of carbohydrates in conjunction with milk feeding and its influence upon the intestinal flora of human subjects. Here we have the work of Backman,[11] of Biernacki,[12] Eisenstadt,[13] Kraus[14] and others who claimed that carbohydrates have but little effect on protein decomposition, while Winternitz,[15] Grundzach,[16] Schmitz[17] and Albu,[18] concluded from extensive studies that lactose especially inhibits these putrefactive changes in the digestive tract, which the last named investigator attributed to its stimulation of peristalsis and to certain inherent antiseptic effects.

It is interesting, in this connection, to note the observation of Grundzach, who postulated as an ideal "antiputrefactive" agent, one which would itself be insoluble, yielding soluble products on disintegration which would be harmless and act as strong acids in *statu nascendi.*

It seems a strange paradox that the discovery of Lactobacillus acidophilus actually antedated that of L. bulgaricus, for it was in 1900 that Moro described the latter organism, which had been isolated from the stools of nursing infants. While the term acidophilus, as applied to this particular species of the lactobacilli, is somewhat erroneous, and should be superceded by the more appropriate one of "aciduric" since the organism in question, tolerates rather than loves high acidity in its substrate, still if regarded in the light of the production of acid under the conditions existing in the digestive tract the term might be considered applicable.

Moro's studies were quickly followed by other investigators who were eager to test the function of the new species in actual feeding experiments on human subjects, and hence we find appearing in the literature the works of Cippolina,[19] Weiss[20] that of Rettger and his associates,[21] and especially that of Torrey[22] in 1915. It was this last named investigator who first demonstrated the importance of L. acidophilus in the feces of adult human beings, and demonstrated the transformation of the intestinal flora by means of lactose feeding. The work of Coleman and Torrey[23] indicated the use of L. acidophilus in correcting tympanites and diarrhea of typhoid fever, and Torrey and Kahn[24] demonstrated that in vitro L. acidophilus was able to inhibit the usual proteolytic activities of spore bearing anaerobes, which seemed to have been based upon the acid produced by the former.

The work of Rettger and his associates, particularly with Cheplin, on the therapeutic application of L. acidophilus, stimulated the general investigation of the subject, and we have that of Gompertz and Vorhaus,[25] Norman and Eggston,[26] Bass,[27] Pope,[28] Reddish, Mizzell,[29] Clark and Perry[30] and others. It is of interest here to quote from the work of Gompertz and Vorhaus, summarizing their results on the treatment of 200 patients suffering from autointoxication and chronic constipation.

"Seventy per cent showed complete relief from their symptoms of toxaemia; 15 per cent showed some improvement while the remaining 15 per cent showed none whatever. Since the 15 per cent of failures included many who did not continue the culture for an adequate length of time we feel reasonably sure that if this treatment is continued for five weeks in every case a larger per cent will show an improvement. In contradistinction to the relief of the symptoms, the constipation itself showed complete relief in only 25, improvement in 35, and failure in 40 per cent of the cases. In the second group, the diarrheas, there was complete relief from all symptoms in 70, some relief in 10, and failure in 20 per cent of the cases (100). Although this study has not been carried on long enough to determine the permanence of these figrues, we wish at this time to record the fact that in these cases under observation for a year or more, from 10 to 15 per cent showed a return of the symptoms."

It is to Kopeloff[31] that we are indebted for one of the most complete reviews of the literature on acidophilus therapy as well as to one of the most comprehensive investigations in this field. Pursuing these studies at the Psychiatric Institute at Wards Island, New York, he was in a position to treat a very large number of patients, with adequate facilities for laboratory studies of all phases of the problem. In these extensive studies including the comparative colonization powers of L. acidophilus and bulgaricus, the effect upon constipation relief of administrations of the former organism, of its role in suppressing putrefactive changes in the intestines, and the most efficient methods for its administrations, there is a very clear and adequate appraisal of the status of the problem up to 1926, the date of publication of his classical contribution to this subject.

We can hardly afford not to quote some of the conclusions that he deduced from his extensive investigations, which we give as follows:

1. L. Bulgaricus can rarely if ever be implanted in the human intestine. In only one instance out of twelve were L. bulgaricus organisms recovered in the feces after two weeks of feeding in large quantity.

2. L. acidophilus was recovered from the feces of all of the same patients ingesting this organism in large numbers. In all but one instance, over 67 per cent L. acidophilus was found by plate count during ingestion, 95-100 per cent being found in four instances. Two weeks after treatmet no L. acidophilus could be recovered due to the short duration of feeding.

3. Constipation was markedly alleviated by administration of L. acidophilus milk containing 200,000,000 viable organisms per c.c. In non-constipated cases there was a tendency to increase the number of normal defecations per day. The benefits of L. acidophilus therapy persisted after treatment and in all but one instance in which the condition after treatment was better than that which prevailed before treatment was instituted.

Further conclusions reached by Kopeloff are as follows:

1. Relief from constipation has been secured in a series of 52 cases by the oral (and rectal) administrations of L. acidophilus milk with or without lactose. Of four non-constipated cases fed L. acidophilus milk for two weeks, two of these had an increased number of normal defecations daily.

2. Lactose proved to be valuable in prolonging the beneficial effects of L. acidophilus milk feeding after the administration of viable acidophilus was discontinued.

3. The results obtained by L. acidophilus therapy appears to have a certain degree of permanence even when the ingestion of lactose is stopped. Eighty per cent of the cases under observation after treatment was discontinued had a greater number of normal defecations than before L. acidophilus treatment was begun. One patient under observation for three years after L. acidophilus and lactose treatment was stopped continued to have normal defecations daily. Prior to treatment this patient averaged only one normal defecation per week. Others also showed benefits upwards of a year after treatment was discontinued.

4. Eleven cases of severe diarrhea, and two cases of sporadic diarrhea were successfully

treated by the administration, oral and rectal, of L. acidophilus milk.

With such conclusive data on the value of acidophilus therapy as the above which appeared in Kopeloff's work a decade ago, it seems almost incomprehensible that the administration and distribution of viable cultures of this organism is still so limited, and so vaguely appreciated both on the part of the physician and the general public. Yet I believe I can make the statement, without fear of contradiction, that acidophilus therapy is less popular today and less known, than it was at the time Kopeloff's convincing data was published.

To explain this seeming paradox one must critically analyze and appraise: (1) The characteristics and qualities of the organism itself; (2) the carriers or maestra, that have so far been employed for its distribution, and (3) the facilities for, and the conditions under which it has been until lately administered.

When we inventory or appraise the characteristics of L. acidophilus we find first of all, and to opinions to the contrary notwithstanding, that biologically speaking, this organism is quite frail, delicate and comparatively poorly endowed with those qualities which would enable it to compete with other aciduric organisms for survival. For example it is incomparably inferior to L. bulgaricus in its aciduric properties, and where this competition takes place *in vitro,* the latter invariably suppresses the former. Again L. acidophilus is a slow grower as compared with the others, and more quickly degenerates when left in contact with the products of its own metabolism.

It is only in the environment of the human or animal digestive tract that it established itself in competition with other aciduric organisms, but the difficulty of placing it there in adequate numbers, in the proper condition of viability, and in a condition of comparative freedom from contamination, has been a problem that the bacteriologist has taken long to solve.

By nature, and by composition, milk is the logical carrier of the L. acidophilus, for though it never occurs normally in this substrate it is comparably suited in composition for the organism, and carries with it the very substance upon which the former depends for its development.

It was natural, therefore, that milk should, as at first, have been used exclusively for the therapeutic administration of acidophilus. However, by a strange paradox the seeming adaptedness of this substrate for the organism, constitutes one of the gravest drawbacks to its use for this purpose.

It is true that milk is one of the most ideal substrates for the cultivation of acidophilus, but since it is the natural pabulum for the growth of the most formidable of the bacterial competitors of this organism, its development and dissemination in this medium necessitates the most drastic form of pre-sterilization, and the most rigid pure culture methods. This sterilization, while it can be made effective in the large percentage of cases, is subject to failure from the fact that the organism whose presence in the product is most assiduously to be avoided, are the very ones most likely to survive sterilization temperatures. Again, fresh unheated milk contains oxidases and reductases, which temporarily retard the growth of putrefactive micro-organism, while the lactic acid group are but slightly impeded, if at all. Upon heating, all of these protective properties are lost and unless an absolutely pure culture of acidophilus is used for its inoculation, a dangerous product is very likely to be the result.

These difficulties, however, are not insurmountable, for bacteriologic technic is now adequate for such pure culture operations and large scale operations, but we are confronted in this case, as I shall now point out, with something more difficult to obviate, namely the effect of this procedure on the palatability of the menstrum.

Sterilization of milk at 15 pounds pressure for the considerable period of time necessary to sterilize milk, alters it in appearance and in flavor, and the average consumer, although he may like fresh or even pasteurized milk, abhors as a rule the genuine acidophilus milk prepared by standard methods. The caramel like color of the product, the peculiar acidophilus flavor, render acidophilus milk as foreign to the taste of the average milk consumer as if it were mineral oil or citrate of magnesia.

Furthermore, the rapid growth, comparatively speaking, of acidophilus in milk means the rapid production of products of bacterial metabolism to which the organism itself is quite susceptible, and from the effects of which it rapidly succumbs.

Kopeloff[32] has shown that the death rate of L. acidophilus in milk when stored at ice box temperature at 9°C. (48.2°F) to be as follows:

Days in Storage	Per Cent Killed
1	45.7
2	73.0
3	97.5

From these figures it is apparent that acidophilus milk is a very unstable and perishable product, and in order to be effective as a therapeutic agent it must be consumed promptly after manufacture. An additional factor militating against the large scale or industrial production of a reliable acidophilus milk, is the sensitiveness of the organisms to minute traces of practically all metals.

Rettger, Levy, Weinstein and Weiss[33] have shown, for example, that metallic copper or copper sulphate in the proportion of from 0.2 to 0.4 per cent markedly inhibits the growth of the organism and other metallic salts have also been proved to have bactericidal effects. This necessitates, of course, the use of glass containers and glass equipment throughout a plant, which markedly increases the plant costs. All of these factors have operated against the success of attempts to industrialize acidophilus milk production, and today practically every large plant which has distributed the product, has discontinued operations.

It is only in hospitals where bacteriological facilities are available, and where there is a more or less constant number of patients to whom acidophilus therapy is indicated, that acidophilus milk therapy seems destined to survive. It is there that the product can be consumed promptly as prepared, and only there where the patient can be made to consume a product, which he naturally detests, under the watchful eyes of doctor and attending nurse. In his home the patient will rarely consume the product, even though his physician recommends it without reservation or equivocation, which is rarely the case. Too often the physician himself is luke warm on the subject, not because of his unbelief in it, but because of his logical doubts in the merit of the product at his disposal.

The most reliable firms of therapeutic manufacturers have sensed the unreliability of acidophilus milk production, and have endeavored to supply a product of thoroughly reliable and proven viability and stability. However, all of these efforts have been unsatisfactory, and most of the preparations have been withdrawn from the market, as they have been found lacking in efficacy, stability and reliability.

The acidophilus therapy and its possibilities have not escaped the attention also of those parties interested in the lure of the profitable exploitation of this intriguing and already well advertised line of medical practice. So there has arisen at various places and at various intervals, many and diverse acidophilus preparations, such as candies, cultures, yeast mixtures, tablets, and various other combinations which have met with a well earned neglect on the part of the public, as well as a well deserved opposition from the medical fraternity.

For these products we can best quote from Bass,[34] who comments thereupon as follows:

"In the instance of tablets none of these examined was found to contain as many as 1000 viable bacteria of any kind per tablet. If it should be granted that all the viable bacteria present were acidophilus it would take about 1,000,000,000 tables or more than 20 tons to contain as many bacilli as are contained in 1000 c.c. or the usual daily dose of the acidophilus milk, the quantity found by most investigators at least, to be necessary to transform the flora."

As these various attempts are reviewed to obtain a suitable acidophilus carrier, and to produce a stable and reliable product for therapeutic purposes, the following errors may be perceived in the procedure heretofore adopted. These errors of procedure seem to have fallen into two categories, viz.: (1) the use of a substrate like milk, which permits of the attainment of the desired concentration of acidophilus bacteria but is very unstable on standing, and the viability of the organism of very brief duration; (2) the use of substrates like milk

whey, in which the concentration of the organism never attains the values desired, and (3) the use of substrates entirely foreign to the nature of the organism, like chocolate or sugar tablets, or mechanical mixtures of the bacteria with compressed yeast.

It can be readily seen that the obtainment of the numbers of viable acidophilus cells in any substrate of a stable form, depends in the ultimate analysis upon some method of artificial concentration, such as centrifugalization or filtration. In either of these procedures we accomplish not only a concentration of the organism, but what is of more value the separation of the cells from the prejudicial environment of the menstrum in which they have been developed, and the elimination of their metabolic products concentrated therein. Both of these desiderata seem to have been accomplished in the new acidophilus product known as lacto yeast, and which has been and is being produced here in Baton Rouge. In the preparation of this product, the development of L. bulgaricus is thwarted at the very outset by the use of a carbohydrate substrate containing maltose rather than dextrose, levulose or sucrose. In this medium the contaminating organism of aciduric tendencies are screened out, the attainment of a pure and concentrated acidophilus culture is effected, and from this point the symbiotic, or mutually beneficial, associative growth of the Lactobacillus acidophilus and yeast is attained. This resulting mass of acidophilus bacteria and yeast is finally filtered off, and a product obtained, containing not only a very high concentration of acidophilus cells, but in a very stable form.

By what is known as "alleocatalysis" the presence of the yeast cells in close proximity to the acidophilus ones, render effective a very much smaller number of the latter when administered in the form of the combined yeast and acidophilus than is possible in any other combination.

By way of illustration we may cite the example of this effect in the following tests; showing the action *in vitro,* of acidophilus and yeast in the form of lacto yeast, and compared with acidophilus alone or acidophilus plus yeast when the two are grown independently. In the first case there is the curdling of previously sterilized milk 12 hours, in the second in 24 hours, and in the third in 18 hours, illustrating precisely the same process that occurs in the human digestive tract.

While the number of viable acidophilus cells in lacto yeast far exceed that required by the American Medical Association in concentrates, it may be assumed from the foregoing that such concentrations are unnecessary, and need not be required.

By the same process of "alleocatalysis" to which we have above referred as taking place *in vitro,* the proximity of yeast cells to those of acidophilus, of symbiotic development, therewith tend to produce an instantaneous growth of the latter, and the benign effect of acidophilus colonization is promptly reflected in the results of the therapy. Having had occasion for a number of years to administer acidophilus and having been situated in a section where digestive infections were very prevalent and very persistent, we have followed this therapy with more than usual interest.

Our study of lacto yeas tas a therapeutic agent has impressed us with its possibilities, and we have reasons to believe that there are virtues in this symbiotic preparation, which its discoverers have emphasized insufficiently.

Next to be reviewed are the conditions existing in the human digestive tract, and what is required to change its flora from the malign to the benign form.

THE PROCESS OF DIGESTION IN THE HUMAN ALIMENTARY TRACT

Beginning with the stomach the food which has been ingested and thoroughly mixed with saliva, containing various enzymes, which attack sugars and fats, is brought into contact with a highly acid menstrum in the form of the gastric juice. The composition of this material and its acidity are as follows:

Water	994.40 grams
Solids	5.60 "
Organic matter	3.19 "
Sodium chloride	1.46 "
Calcium chloride	0.06 "
Potassium chloride	0.55 "
Hydrochloric acid	0.20 "
Phosphates, of calcium, of magnesium and of iron	0.12 "

The acidity of this material, in the normal individual runs around 4 to 6 c.c. of N/10 Na OH per c.c. and the pH around 2 to 3. It will be seen that immediately the food enters the stomach, the organisms contained therein are subjected to the deleterious action of a relatively high concentration of hydrochloric acid, and as a consequence there is, not only no bacterial growth, but on the contrary a material diminution of the viable micro-organisms originally contained in the ingested food. From the time the food leaves the stomach (3 to 6 hours after ingestion) through the pyloric opening into the duodenum and receives the bile and pancreatic juices, the pH increases and the condition for the development of putrefactive bacteria becomes increasingly favorable. When the colon is reached there is a battle ground for all the micro-organisms which have survived the action of the acid in the stomach.

In addition to the acidity of the stomach, there is another condition which tends to direct and control the subsequent phases of the competitive activities of the various groups of mircro-organisms in the human digestive tract, and that is the decreasing supply of available oxygen. To illustrate this, the action upon methylene blue of the contents of the various parts of the digestive tract from the duodenum to the entrance to the colon may be sketched. Beginning in the ileum, the reducing action is sufficient completely to decolorize methylene blue and anaerobic conditions prevail from this point throughout, until the contents of the colon are discharged. From the ileocecal valve opening into the colon, the number of micro-organisms increases tremendously and have the opportunities, for the predominance of any group of micro-organisms in this part of the digestive tract, depends upon the comparative number of viable cells which reach the point and the ability of the organisms to develop under anaerobic conditions. In addition to these there should be included a third factor which we have so far omitted, and that is the decreasing moisture content of the fecal matter from its entrance into the colon until its discharge through the rectum. Lactobacillus acidophilus is exceptionally adapted to survive these conditions and by virture of this capacity it is able to suppress the growth of the malign micro-organisms which would otherwise predominate and generate the toxins from which we all suffer to varying degrees during adolescence, adult life and senescence. In the first place the Lactobacillus acidophilus, while not true to its name in preferring acid substrates, has undoubtedly an adaptitude to such conditions to a greater degree than any of its co-members of this group. It will easily survive exposure to a pH of 3.0 over long periods, and will grow in a substrate containing 1 per cent of acetic acid. While Lactobacillus bulgaricus will produce more lactic acid than the acidophilus the latter will better survive a long exposure to this influence. However, it is our belief, based on a long study of the characteristics of this organism that the property that enables it to survive and to colonize in the human digestive tract is its ability to develop in an atmosphere deficient in free oxygen, that is its facultative anaerobic nature.

Nor do these considerations, above enumerated exhaust the explanations of the adaptitude of the acidophilus organisms to survival in the human digestive tract. It is known, for example, that the stools of infants impregnated with these organisms are comparatively immune to the development of putrefative organisms. Thus, Murath and Moro have found feces of infants not only do not support the growth of anaerobic organism of the putrefactive class but are actually inhibitory of such development even when fresh food materials have been added.

Hence, it is found that Lactobacillus acidophilus is equipped in many ways to survive the competition with malign micro-organisms and thus the value of attempts to implant this organism in the digestive tract is based on the soundest physiologic and bacteriologic principles and the success of such efforts on the part of the individual and the medical fraternity is worth every effort that has or can be made to promote it.

CONCLUSION

I would say that it seems, in the light of my own and that of my associate's experience, that lacto yeast supplies the qualities so long wished for in acidophilus therapy, and that we are

fortunate in having at last a dependable and a durable source of viable acidophilus. We might add that it is doubly fortunate that the product itself has none of the deterring elements of taste and flavor, which has prevented the usage of other acidophilus products by the American people.

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DIABETIC INFECTIONS AND GANGRENE*

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NEW ORLEANS

The frightful mortality which attends the complication of diabetes mellitus by surgical diseases of the extremities, especially of the lower, demands the attention of every individual engaged in the practice of medicine. The extent to which the poor results generally obtained are due to the ignorance of the patient on the one hand, and to the lack of understanding of the problem by the physician on the other, cannot be estimated accurately. Some of the features of diabetic infections not universally appreciated by either the patient or the physician are:

1. The minimal amount of pain and constitutional reaction which often attend infection in the diabetic patient.

2. The rapidity with which infections progress in the diabetic.

3. The rapidity and insidiousness with which diabetic patients develop blood stream infections.

4. The profound effect which infections exert upon the metabolic disturbance.

1. As pointed out by McKittrick,[3] the problem in many respects is quite analogous to that in the treatment of malignant disease. In diabetic, as well as in cancer patients, the relative lack of pain and constitutional reaction often belies the seriousness of the disease process. Diabetic patients frequently have much less pain and fever than normal individuals with the same lesion, so that they fail to seek attention until the disease has progressed past the stage in which proper treatment offers the greatest opportunity for attaining a minimum of morbidity, or even for avoiding mortality. The following cases serve as striking illustrations of this point:

Case 1. A white female, a known diabetic, received a small splinter into the ball of the right foot. The localized infection which soon developed at the site of the wound was not painful and for this reason she attached little significance to it. She completely disregarded the warnings of her physician and laughingly refused to furnish him with a specimen of urine. One week later, she was admitted to the hospital with a massive infection of the entire foot, and died twenty-four hours afterwards in spite of drainage and the administration of huge amounts of insulin.

Case 2. A white female, aged 60 years, known diabetic, developed a "boil" in the interscapular region. This was accompanied by very little pain and by no fever, even after it had progressed so that the "boil" had become a carbuncle about one foot in diameter. Only after the lesion had con-

*Read before the Orleans Parish Medical Society May 25, 1936.

tinued to maintain this size for one week did she become sufficiently alarmed to call upon her physician. A few hours after her admission to the hospital, her temperature rose rapidly to 105°F., where it remained until she died twenty-four hours later, after incision and drainage and administration of large amounts of insulin.

In both these cases the lesions which eventually caused death were considered of minor importance by the patient because of the relative absence of pain and constitutional reaction.

2. The rapidity with which infections progress in the diabetic is at times nothing short of terrifying. The diminished resistance of the tissues to bacterial invasion due to the disturbance in carbohydrate metabolism and to the concomitant vascular disease is familiar to most of us, but actual appreciation of the significance of this phenomenon might be improved by the following case review:

Case 3. A white female, aged 43, was admitted to the hospital because of diabetes mellitus. In addition to diabetes there was a blister on the left heel, which she stated was due to an ill-fitting shoe. This lesion was not considered of great importance. Within twelve hours it had become infected, and the infection had extended into the deep spaces of the leg, and accumulations of frank pus were found in the intermuscular spaces and subcutaneous tissues as high as the knee.

Again, as in Case 1, according to the history, the picture changes within a period of about twelve hours from one of a small infected area in the ball of the foot to one of massive infection of the entire foot including the ankle.

3. The diabetic develops blood stream infections many times more easily than does the non-diabetic patient. There is usually no warning and there is no relation between the time of development of the septicemia and the time the local infection reaches its height. At times the septicemia occurs when the local lesion is quite small; other times it occurs when the local infection is at its height, and quite commonly, it furnishes both internist and surgeon with the almost heart-breaking experience of seeing the patient relapse and die when it appeared that he was rapidly getting well:

Case 4. A white female, 46 years of age, was admitted with diabetes mellitus and a huge carbuncle on the back. Immediate attention to both the diabetes and the carbuncle was obtained. Day after day for a period of two weeks the wound was carefully attended and the diabetes kept rigidly controlled. The temperature began to drop and the wound was healing nicely and no further difficulty was anticipated. However, the patient became suddenly quite ill; the temperature rose steadily and a blood culture showed staphylococcus albus. Within a few days the patient was dead.

The insidious onset of the diabetic infections together with the rapidity with which these infections often spread and the ease with which the blood stream is invaded make it absolutely necessary that we place this group of patients among those others who are desperately in need of immediate attention regardless of the extent of the local lesion. They are emergencies of the highest order. The cost of delay in life and limb is probably many times greater than the same delay in cases of acute appendicitis.

4. The effect of pyogenic infection upon the disturbance of carbohydrate metabolism in diabetes mellitus is not generally appreciated by the physician. It is this circumstance which gives rise to so much misunderstanding between internist and surgeon and which often results in the complete failure to take advantage of the one opportunity which presents itself for but a fleeting moment in many cases, with the result that the patient loses his life. Almost immediately upon the occurrence of infection by a pyogenic organism the diabetes usually becomes more severe, often to a much greater degree than it has been. The output of sugar increases rapidly and occasionally four or five, or many times more as much insulin may be required to control the diabetes than was customary. Often there is marked fluctuation in the diabetic state and adequate control is extremely difficult or impossible. The patient experiences insulin shocks on one day and excretes large amounts of sugar on the next, with the same diet and same insulin dosage. With very severe infections the requirement of insulin rises to almost unbelievable heights and very often the administration of insulin is entirely without effect. Case 1 had an infection of the entire foot; the deep spaces of the foot were all involved. Following refusal of amputation by a surgical consulant who wished to attempt to save the foot, the administration of 750 units of insulin during the next twenty-four hours failed to control completely the ex-

cretion of sugar. Again, in Case 2, the administration of 450 units of insulin in twenty-four hours failed to render the urine entirely sugar-free. Thus, the presence of extensive infection often makes the diabetes impossible of regulation and control and our only hope for preserving the lives of such individuals lies in the immediate removal of these severe infectious processes whenever feasible. The relative ease or difficulty with which the diabetes can be controlled should be considered a most important factor in determining the course to be followed by the surgeon. One has no hesitancy in expressing the belief that the greatest calamity which has ever befallen the diabetic patient has been the popularization of the false idea that surgery should never be attempted on a diabetic until the diabetes is under rigid control. When a diabetic patient develops a pyogenic infection a vicious circle is established; the infection aggravates the diabetes, and with the increasing degree of disturbance of the carbohydrate metabolism the relative virulence of the infection is enhanced. An attempt has been made above to show that the vicious circle cannot always be broken by the internist with his insulin; experience has shown that the delay involved in making the attempt is often fatal and that in many instances the patient's life can be preserved only by immediate removal of the infection, breaking the vicious circle on the other side so that it may become possible to control the diabetes with insulin. Immediate surgical intervention in some of these cases is one of the most urgent emergencies in medicine. Delay to the next routine operating hour, even if only twelve hours distant, may render treatment of any type futile.

Only by close cooperation with the internist can the surgeon hope to obtain fair results in these cases. The treatment of the diabetes by the internist and the infection by the surgeon, as if the two disease processes existed in different individuals and had little influence upon one another, is a vicious practice and is doomed to failure.

In contrast to Case 1, Case 5 is presented.

Case 5. A colored female, first seen when an infection of the left middle and end toes had caused gangrene of the digits and had progressed to the deep spaces of the foot as far as the middle of the metatarsal bones. Crepitation was present throughout the distal one-half of the foot and there was a large draining sinus between the second and third toes; lymphangitis to the knee. The urine was loaded with sugar. The infection was definitely not due to the Clostridium Welchii but immediate amputation was advised because of the unlikelihood of controlling either diabetes or a rapidly advancing infection with extensive lymphangitis when both occurred in the same individual. Amputation was carried out two hours later. The diabetes was controlled within twenty-four hours and the patient discharged two weeks later.

DIABETIC GANGRENE

The diabetic patient has suffered greatly from the dissemination of the false idea that diabetic gangrene is simply arteriosclerotic gangrene occurring in a diabetic. However true it may be that the same factors are in operation in both, the fact remains that infection plays a major role in diabetic gangrene, and that for the purpose of treatment these cases are best looked upon as a group of infections in extremities with varying degrees of vascular disturbance. A very few among them may exhibit a minimum of infection and present the clinical picture of dry gangrene, and may be so treated, but even in these the physical appearance is deceiving and death may occur from septicemia without visible extension of the local infection. On the other hand, the vascular element may be negligible and the condition purely one of infection. Between these two extremes are arrayed the vast majority of these cases, frank infections in extremities with various degrees of vascular disturbance. In any case, enhanced by the metabolic defect, the progress of the infection is more rapid than in the non-diabetic with a similar vascular disturbance, and it must also be realized that the infection is extraordinarily effective in destroying the blood supply of the tissues in many of these cases, because the blood supply instead of being furnished by several larger vessels is carried by a large number of quite small ones, which are much more easily thrombosed by infection and compressed by inflammatory edema. Thus it is that in many diabetic extremities, even with efficient collateral circulation, the progressing infection is actually the prime factor in depriving the tissues of blood supply. The infection is in-

vited by the metabolic disturbance, progresses rapidly by virtue of the same factor, and gangrene of the area results because of the peculiarity of the blood supply of the tissue. One cannot too strongly emphasize the fact that these cases are cases of infection and should be treated as such by adequate drainage where amputation is not done.

In the management of these cases the vascular supply, the infection, its rate of extension, the metabolic disturbance, and the cardiovascular renal status must each be estimated, the reciprocal effects of these factors upon one another must be evaluated, and finally the summation of all of these effects upon the patient's chances for preservation of life, limb, and economic security must be arrived at. Then, and then only, can the proper treatment be instituted.

The details of the method of study of these cases need not be reviewed here. We are all familiar with the examination of infections of the extremities and the vascular supply. The oscillometers and other instrumental methods, as well as salt and histamine injections have proved of relatively little value in these cases. The methods of physical examination are more dependable and are generally relied upon.

The principles of management used are best reviewed by illustration:

Case 6. A white male, aged 59 years, was admitted with diabetes mellitus with a present history of claudication and a small infection on the inner side of the great toe of the left foot. The diabetes was of moderate severity. The dorsalis pedis and posterior tibial pulsations were not present in either extremity. Both limbs were colder than normal. The infection was small and apparently well localized. It was treated conservatively and after two weeks of control of diabetes, failed to heal. It likewise failed to progress. At this time, the infected area was excised, the incision being made in "healthy" tissue. A few days later the entire foot was discolored, sugar appeared again in the urine, and amputation was done through the leg (below the knee). About one week later, re-amputation was done in the thigh. At the present time the stump is slightly infected.

In this case the surgeon was dealing with a diabetic extremity with marked vascular embarrassment as evidenced by the present history of claudication, the absence of pulsations and by the temperature changes. The infection was evidently a very small one and a very indolent one, not a rapidly progressing cellulitis. It is of extreme importance to note whether the infection is spreading rapidly or is localized. With an infection of small extent which is causing no great aggravation of the metabolic defect, one may temporize. While some prefer to amputate such a poorly vascularized extremity as that described above, others prefer to use conservative measures, hoping that the infection will heal and that with vascular exercises collateral circulation might be developed and the limb preserved. If a conservative policy is adopted in such a case as that described above, the lesion must be treated simply by moist dressings. The tissues in such an extremity tolerate no trauma whatsoever, no matter how slight, and that involved in the excision of the infected area in this case was sufficient to produce involvement of the entire foot, make amputation necessary, even urgent. Amputation of the leg in a diabetic patient with involvement of the entire foot is rarely successful. Amputation in the thigh might just as well be carried out immediately. We have seen in this case that re-amputation became necessary. In two situations amputation in the upper third of the leg may be indicated: (1) When the infection is not progressing rapidly and there is no lymphangitis of the leg, and the ankle is not involved, and when in the same patient the vascular supply is good. In this type of case a circular amputation with primary closure is done. (2) When there is involvement of the whole foot and lymphangitis extending the length of the leg, it is better to do a guillotine in the leg without closure first, and then do an amputation through the thigh later, when the effects of the infection have disappeared.

Case 7. A white female with diabetes, aged 58 years, was admitted to the hospital with an infection on the lateral side of the base of the great toe of the left foot. A black slough covered part of the infected area. At the margin of this slough there was a deep fissure along the wall of which the tendon of the extensor hallucis longus could be easily seen. How deep this infection extended into the web of the foot could not be positively determined. There were no actual signs of involvement of the deep spaces of the foot itself. The pulsations were excellent; the limb was warm

and of excellent color and gave a fairly good response to changes in position. Because the history indicated that the infection had not extended during the past week, and because there was no involvement of the bone (roentgen ray), it was deemed advisable to attempt to save the toe. The efficiency of the vascular supply seemed also to justify this decision. The diabetes was easily kept controlled with 75-90 units of insulin a day. Warm compresses were applied continuously. After four weeks, the wound was cleaner (the slough had been easily and gently removed), and granulating slowly, but was far from healed. Because of economic considerations it seemed that the patient would have been much better off without the toe. However, it must be remembered that the infection was at the base of the toe and there could be no question but that amputation of the toe alone could not be done without danger because the incision would necessarily be carried either through or very close to the infected area. The great possibility of precipitating involvement of the deep spaces of the foot by thus opening avenues of infection and thereby necessitating amputation through the thigh or upper third of leg dispelled toe amputation from our minds. Primary amputation of the foot in order to save a month or two of confinement seemed unjustified in the face of high vascular efficiency. Conservative treatment was continued and the wound was completely healed in another six weeks. The patient's toe is in excellent condition at the present time. Had the infection been the tip of the toe, amputation of the toe might have been justified by economic factors. Had the bone been involved, amputation of the toe would have been absolutely necessary. Osteomyelitis in a diabetic patient demands amputation; in the toe it is desirable that amputation be delayed until the infection is well localized, when it can be done without danger to the foot.

I have here reviewed Case 5; amputation through the leg was done because there was rapidly extending infection involving the deep spaces of the foot to the middle of the metatarsal bones. Had the infection involved more of the foot (to the ankle) and had there been poorer circulation, amputation through the thigh should have been done. With an infection that is non-gas-producing, which reaches the extent present in this case, more conservative therapy might be considered in an individual without much lymphangitis and with excellent circulation. Rapid control of the diabetes should be attempted while warm hypertonic soaks are applied to the area. If no extension of the infection occurs within twenty-four hours and the diabetes is not difficult to control, the conservatism might be continued for a similar period. Incisions for drainage are generally not necessary but small ones may be made through the webs. Blunt dissection and through and through drainage are absolutely contraindicated in the diabetic foot. Amputation of the toe or toes in which the infection originated is more desirable. In this manner, one might occasionally preserve a foot. However, this applies only to feet with excellent circulation and with infections which are not very extensive, and which do not continue to extend. Most infections of the deep fasciae spaces of the foot in the diabetic are uncontrollable and demand immediate amputation in order to prevent death from septicemia or diabetic coma. The site of amputation is determined by criteria already mentioned.

The method of dealing with infection and gangrene involving the entire foot such as that represented in Case 1 is immediate amputation, if permitted by the general condition of the patient.

Too often, the physician fails to realize that the middle aged arteriosclerotic individual suffers the same types of changes in his renal, cerebral, and coronary vessels as are present in the extremities and that prolonged absorption of toxins from a badly infected foot threatens the patient's life, not only by its effect on the carbohydrate metabolism as illustrated previously, but also by its effects upon the damaged heart and kidneys.

In all patients with diabetic infections of the extremity, septic blood cultures should be obtained. In any case in which there is a sudden increase in temperature or in severity of the diabetes as manifested by increased sugar excretion, the culture should be repeated even if infection has occurred. It might be well to point out here that blood sugar estimations are of very secondary importance. The metabolic defect should be controlled by careful daily qualitative analysis of the urine, all of the urine, not one or two specimens a day. The blood sugar fluctuates widely and its estimation is almost valueless. It is a matter of common observation that the blood sugar may be within normal limits before breakfast and yet the urine

show large amounts of sugar during the day, indicating that the blood sugar has risen to very high levels. There is no space here for a discussion of this matter.

SUMMARY

The problem of diabetic infections and gangrene is one of which volumes might be written. The purpose of the present paper has been to call attention to the peculiar nature of this problem and to the necessity for early, urgent and cooperative treatment by internist and surgeon.

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DISCUSSION

Dr. James D. Rives (New Orleans): I was one of those who, until a few years ago, believed that the surgical diabetic had to wait for surgery only until proper medical treatment had been instituted. I have regretfully abandoned that position, largely because of experiences in which Dr. Gardberg and I participated. We have worked together in the colored wards of Charity Hospital from time to time for about six years, and have proved to our complete satisfaction that the very common infections and gangrene in our patients made the control of diabetes so difficult that it was frequently impossible under the conditions under which we had to work. Gangrene in the diabetic patient is so frequently complicated by infection that we cannot handle these cases as if they were simple senile gangrene in the diabetic. We have frequently seen these patients under proper medical treatment border on coma today and on insulin shock tomorrow, without any variation in the amount of insulin or diet, except for possible surreptitious feeding by the family. Consequently we have found it necessary to adopt a rather radical attitude toward these cases. My experience has been very largely limited to these cases in Charity Hospital where there is always a certain amount of uncertainty as to the amount of food actually consumed, due to the inability of a small nursing corps to keep an accurate check on the intake.

In those cases in which amputation is required there is a great deal of dispute as to the level at which it should be done. I am not in entire agreement with Dr. Gardberg on this point. I believe, and I have seen enough cases to support that belief, that amputations below the knee are practical in most diabetics with gangrene, provided that the circulation be adequate to support the extremity if diabetes were not present. The proper levels for amputation, however, are dictated by economic considerations and by practical considerations related to the wearing of artificial extremities. The lower extremity is the one usually involved. If the little toe, for example, is involved, nothing is to be gained by prolonged treatment calculated to save it because it is of so little value. If, on the other hand, the big toe is involved, every effort should be made to preserve it if the foot is to be saved. If the foot is to be crippled and useless the patient is better off without it. If it is to be stiff, subject to diminished blood supply, which makes it painful in cold weather and in changes of weather, and also susceptible to subsequent gangrene, amputation is preferable. Most Charity Hospital patients, particularly those of advanced age will have to wear peg legs for this purpose, and amputation below the knee is quite satisfactory since the kneeling position in the peg leg is the most stable as well as the most comfortable. A long segment of leg projecting behind the peg, on the other hand, is most undesirable. If amputation is done above the knee, the peg leg cannot be used at all, and the patient is doomed to crutches. We believe, therefore, that if amputation of the leg is necessary, every effort should be made to do that amputation at some point in the middle third, where there is a large bulk of muscle and the circulation is comparatively profuse. There is no advantage in an amputation below the middle third, since the stump in such cases is too long for a peg leg, and is also unsatisfactory from the standpoint of the artificial limb-maker. Amputation at this level leaves the bone covered only by skin which is rather poorly vascularized.

The thing which we need most to learn and which has not been well understood is that every one of these patients requires two medical attendants, an internist thoroughly versed in the treatment of diabetes and a surgeon thoroughly qualified in the treatment of surgical diabetics. It is rare that these qualities are combined in the same person. There may be some surgeons who know enough about diabetes, and there may be some internists who know enough about surgery, but I have not met either. The answer to this problem is that two men must work together constantly during the management of these cases.

When the internist informs the surgeon that the diabetes in a given case cannot be controlled so long as the infection or gangrene exists, whenever he informs him that the patient is in the best condition possible to attain, the surgeon must stand ready to undertake immediately whatever surgical procedure is indicated. No two patients act alike. No physician can promise to control the diabetes in a surgical diabetic throughout a period of 24 hours. The operation must be, therefore, an urgent emergency, and it must be carried out at once when the physician has succeeded in producing the best pos-

sible condition. If proper cooperation is to be achieved the internist must inform himself of the possibilities of surgery, and the surgeon must inform himself of the possibilities and limitations of the medical management of the diabetic in the presence of infection or gangrene.

Dr. I. Lemann (New Orleans): I am very glad that Dr. Gardberg has emphasized the metabolic point of view that one should take with regard to these infections in the diabetic. One must never forget that as far as metabolism is concerned, the diet of the patient is not altogether the food that he is taking. If the patient stops eating he continues to contribute to his maintenance from himself; he devours himself. If he stops taking carbohydrate, protein, and fat in his food, he eats his own protein and fat, and he is put into starvation by high fat diet. When protein is increased in the presence of infection he is on a still higher protein and fat diet. Dr. Gardberg is right, therefore, in insisting that in the presence of infection, insulin cannot be effective even, as he has put it, in unbelievable quantities, because the true diet of the patient under those conditions is extremely difficult.

I quite agree that these operations, the amputations of limbs in which infections are present, and the treatment of infections elsewhere in the body, as in the frank carbuncle in the back described by Dr. Gardberg, call for immediate attention. Too often we are still confronted in consultation with legs that are no better from continued infections through weeks because the doctor has had the idea that insulin will bring that patient into such a condition that an operation will be possible. Too often, therefore, this picture is presented to us where we are damned if we do, and we are damned if we do not. It is already too late to advise an operation, and if we advise further waiting, we are sure to yield even the small fraction of a chance that the patient may have.

On the other hand, I found myself fearing that Dr. Gardberg had given the idea that all patients with gangrene should have their legs off. I am sure he did not mean it, but I am afraid the pendulum may swing the other way, and, instead of giving a patient with dry gangrene a chance with conservative methods, that these legs will be taken off unnecessarily. As the doctor pointed out, the question of when to amputate and where to amputate is a very difficult one and in spite of the wealth of material that Dr. Gardberg has presented and the illustrative cases, I should say that neither he nor I can always say when the amputation should be done. I remember cases where I had advised against amputation, where the surgeon wanted to amputate, and I was right. I can remember where I wanted to have amputation done, and where the surgeon was reluctant, and the surgeon was right. It is a very difficult matter.

I do not think we can insist too much upon safe principles: One, that where the gangrene is dry and superficial we can wait. Two, that where there is infection amputation must be done. I am inclined to agree with the discussor. I believe that we must first above all not touch the foot; not undertake to amputate at all. Nor do I believe that it was justified to amputate through the foot. I believe that you run too great a risk for too small an advantage. On the other hand, in most cases I should say it is not necessary to amputate through the thigh. In the majority of cases where amputation is necessary, amputation below the knee as Dr. Rives indicated, is proper. There is one indication for amputation that I believe neither Dr. Gardberg nor Dr. Rives emphasized adequately, and that is the matter of pain. I have seen patients who might have avoided amputations on the basis of safety, as regards the control of the diabetes, who had to have the amputation done because of the extreme pain. And finally, I wish to emphasize what Dr. Rives referred to, and that is the economic side of amputation. I think we must in some cases decide the site of the amputation upon the economic situation of the patient.

Dr. J. H. Musser (New Orleans): Dr. Gardberg has discussed the subject very completely. Dr. Rives and Dr. Lemann have added much. The only comment I would like to make is to disagree with Dr. Lemann. I think there is a tendency among the medical men, and the surgeons as well, to procrastinate and to hope that this wonderful substance, insulin, is going to do what it is supposed to. It is rather a serious problem to take off a patient's leg. I think for the main part that the mistake is made not in amputating but in waiting too long.

Dr. Urban Maes (New Orleans): I want to begin by emphasizing a point that Dr. Gardberg has already made, that diabetic gangrene is a condition which must be treated by both the internist and the surgeon. They cannot work independently. Insulin without surgery does no good, and surgery without insulin and other medical measures is likewise useless. Lives can be saved only by cooperation.

As to the treatment of gangrene, there are three possible courses. The first is no surgery at all. Conservative treatment is frequently possible when the gangrene involves only the toes. Indeed, hasty amputation for localized gangrene is to be deplored, for vigorous local treatment, combined with other measures, will often be all that is necessary. The second possible method is conservative amputation below the knee. In a large series of cases we have shown that this type of surgery is not associated with an undue mortality, and where circumstances warrant it, it ought to be employed. The loss of a limb is a serious matter for the patient, and the surgeon should

hesitate before he resorts to mutilating surgery. The third possible method is amputation above the knee, and this procedure is attended with an inevitably high mortality. The old law that the mortality of amputation is in exact proportion to the nearness of the site to the trunk unfortunately has never been overturned. In a study of 171 cases of gangrene, Dr. Veal found the mortality of amputation below the knee to be about 37 per cent, while amputation above the knee carried a mortality of 55 per cent.

If the case is properly selected, amputation below the knee is a safe procedure. In this connection I should like to point out the interesting and valuable studies made by Dr. Veal. By visualization with injections of thorotrast he has been able to show the blood supply of the parts and to furnish us with sound criteria for determining the level of amputation. His work furnishes a partial explanation of the very considerable fall in the mortality of amputation on our own service.

In conclusion, I should like to point out the unwisdom of delaying amputation until the line of demarcation is evident. The medical man who delays calling the surgeon until that stage is going to furnish him with a large number of hopeless cases. Even the best of surgeons cannot save a patient who is hopelessly ill when he is first seen, and no matter how worthy are the motives of the internist, he risks his patient's life by such miscalled conservatism.

Dr. Manuel Gardberg (In conclusion): As Dr. Lemann has pointed out, I did not intend to convey the idea that I was in favor of amputating all extremities that were infected. I have had a couple of pretty bad ones that I have not amputated and which got along well without amputation.

The decision as to where to amputate depends on the condition of the circulation, the rate of spread of infection, the effect on the diabetes, and the effect on the patient otherwise. As far as the level of amputation is concerned, I did not mean to give the impression that they should all be amputated at the thigh. The particular case I had reference to had marked vascular disturbance. In such cases McKittrick followed the rule that amputation below any level of the middle of the thigh would be useless and would require further amputation. The mortality in multiple amputations of the same extremity is extremely high. The mortality of primary amputation through the thigh is considerably less than the mortality of two operations. The control of the level of amputation is, of course, a matter of considerable discussion. McKittrick has recently been amputating more patients through the upper third of the leg than he had dared to previously, and is very enthusiastic about the results he is getting.

Control of amputations in the diabetic with the use of thorotrast is something I have been afraid to attempt. My objections may be groundless, but experience with the effect of trauma is likely to fill one with a great deal of respect for diabetic tissue. The puncture of the femoral artery in these cases, an artery often already badly diseased, may not be without some danger, particularly if some little accident should occur, and if there should be infiltration of tissue with thorotrast, or or if a hematoma should be produced, (and these hematomata in diabetics have a habit of becoming infected) I am afraid the consequences might be fatal. I am entirely open-minded on that situation, and I intend to watch some of the work, but up to this time I have not had any experience with thorotrast.

A MODERN METHOD FOR THE LOCALIZATION AND TREATMENT OF INTRA-OCULAR FOREIGN BODIES*

M. EARLE BROWN, M. D.†

NEW ORLEANS

While presenting a modern method for the localization of intra-ocular foreign bodies, and describing the method of treatment of our selection, it is not with the purpose of discrediting the well established methods of the past, but to report some inaccuracies which have been observed.

Doctor Sweet's method of localization and its modifications are, or course, well known, but they require, as you know, expensive and intricate apparatus, which is infrequently used and impractical in the equipment of the eye physician and radiologist, in other than great industrial and medical centers.

The subject is of great importance as many intra-ocular foreign bodies opaque to the roentgen ray are non-magnetic. The diagnosis, therefore, comprises the following points:

1. Usually there is a history of a recent ocular injury.

2. As most intra-ocular foreign bodies enter through the anterior segment of the eye, the wound of entrance is observed. The anterior chamber may be opened, a traumatic cataract

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*Read before the Louisiana State Medical Society, Lake Charles, April 27-29, 1936.

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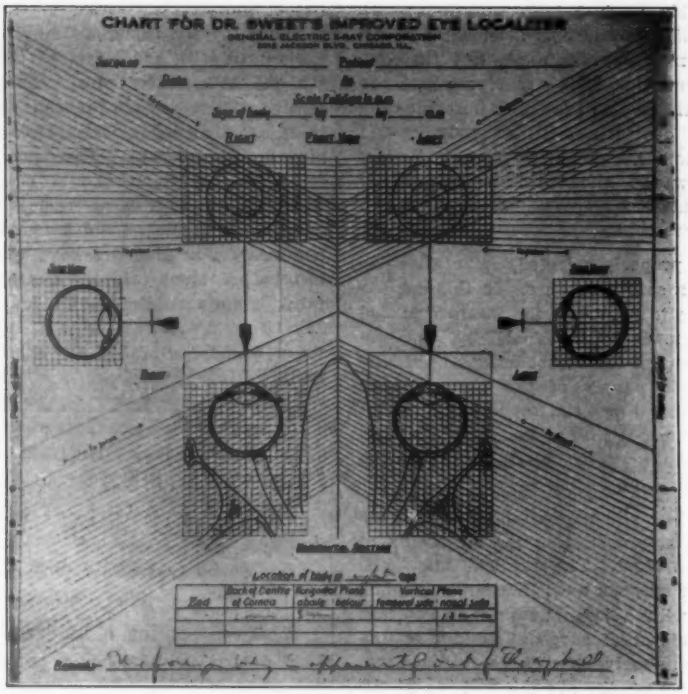

Fig. 1, Case 1

may be present with hemorrhage in the anterior chamber, laceration of the iris, and protrusion of same.

3. The ocular response to the magnetic impulse. When the tip of the giant magnet is placed in contact with and in the center of an eye containing an intra-ocular foreign body, upon closing the controlled electric current, the eye accommodates itself to parallelism, and the patient experiences pain. Where the foreign body is non-magnetic no such ocular movement is observed and there is no pain. It is, therefore, apparent that the ocular response to the magnetic impulse demonstrates the presence of a magnetic foreign body within the eyeball. Where there is no response, the foreign body may be within the eyeball, but of non-magnetic element, or may have passed through the eyeball into the orbital cavity.

4. Roentgen ray studies: Many observers have reported the use of two exposures upon one film and Verwey in 1924 reported his method of "localization of a foreign body in the eye in relation to the rotation center." It escaped my attention, however, when the present method was evaluated. A lateral radiologic study is made to determine the presence or absence of a foreign body within the orbit. Should one be found a double exposure picture is made in the posterior-anterior position. The patient's face is placed upon the film while the eyes are directed downward, the current is closed for the exposure, the eyes are then directed upward and the second exposure is made. Should two objects be observed upon the film, the foreign body is positively within the eyeball; should only one object be seen, the foreign body is extra-ocular or intra-ocular at the center of rotation. In such a case the eyes are moved from right to left.

The posterior-anterior view is used instead of the usual anterior posterior position in order to get the maximum sharpness of the foreign body with the least distortion and magnifica-

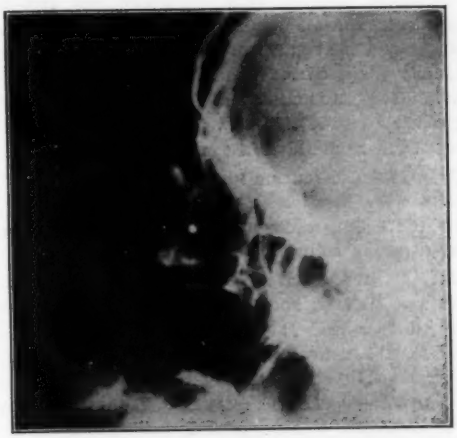

Fig. 2, Case 2

Lateral study showing metallic foreign body in the orbit.

Fig. 3, Case 2

Double exposure method in the posterior-anterior position showing non-magnetic foreign body within the eyeball.

tion. The usual anterior-posterior view offers more magnification and distortion with less sharpness of the foreign body.

The patient is placed upon the operating table in the recumbent position near the magnet, instead of standing before it. The magnet is manipulated to a point directly over the center of the cornea, with its tip in contact with that membrane.

As the current is slowly closed, a sensation of pain is experienced when the foreign body begins to move upward. The current is reduced in order to permit the foreign body to be drawn slowly around the lens through the zonula of Zinn until it appears behind the iris, which it causes to bulge. The current is opened as quickly as possible or the magnet is raised to prevent injury to the iris. The current is again slowly closed while the magnet is gently manipulated to draw the foreign body into the anterior chamber through the pupil. The anterior chamber is then opened at axis 90° with a keratome, the tip of the giant magnet is removed and the Victor flexible extension is attached, which reduces the magnetic force from the giant type to a small one. The flexible tip is introduced into the anterior chamber, the current is closed slowly and the foreign body is gently withdrawn.

It often occurs that the foreign body cannot be drawn into the anterior chamber because the pupil cannot be dilated or the piece of metal is jagged and becomes entangled in the folds of the iris. In such a case an iridectomy is performed and the piece of metal is delivered through the coloboma.

It is erroneous to suppose that removal of intra-ocular foreign bodies by the method just described produces injury to the lens or capsule. Of course, the lines of magnetic force pulling from one end of the giant magnet to the other under ordinary conditions must necessarily pull in parallel lines when the tip of the magnet is placed in contact with and in the center of the cornea. The course of the foreign body is parallel as it passes through the vitreous, but becomes deflected when it reaches the lens because it passed from a medium of lesser resistance (vitreous) to a greater one (lens), the surface of which is biconvex and elastic.

In cases where the wound of entrance is in the cornea and the piece of steel has passed through the capsule and lens with the aqueous and vitreous in contact with the lens fibers, cloudy swelling and later disintegration with softening follows (traumatic cataract), thus reducing the resistence of the lens. The piece

of metal following parallel lines enters the anterior chamber through the softened lens. The hand magnet is useful in those cases when very small fragments of magnetic metal are near the surface and when the patient has come under treatment 24 hours following the injury, before exudates have formed.

Intra-ocular metallic foreign bodies are not removed through the posterior route because the retinal detachment, which usually follows such procedure, renders the eye sightless. (Case history number 5). Doctor Verhoeff prefers the anterior route after thirty years' experience believing it to be the safest procedure. Statistics from the Herman Knapp Memorial Eye Hospital, as reported by Walter F. Duggan in 1933, show 30.6 per cent retinal detachments following scleral wounds and only 4.7 per cent in cases without scleral wounds, accidental or operative.

In order further to elaborate the method of Haab (anterior chamber route), advocated in this paper, small pieces of broken surgical needles were inserted posteriorly into 25 fresh pigs' eyes near the entrance of the optic nerve and pushed into the eyeball, after which the technic described in this paper was employed. After the foreign bodies were drawn into the anterior chamber the eyes were sectioned and in no case was the lenticular capsule or lens injured, the piece of steel having passed around the lens.

CASE REPORTS

Case 1. P. H., a white man, married, aged 26, a truck driver, was injured while repairing an axle. A fragment of steel entered the right eye near the limbus on the nasal side, July 15, 1932. He applied for treatment in the outdoor clinic of the Eye, Ear, Nose and Throat Hospital. The interne's clinical notes state that the patient came in as an emergency case, was admitted to the hospital and no foreign body could be seen with the ophthalmoscope because of blood in the anterior chamber. Sedatives were ordered and he was sent to the radiologic laboratory for study July 16, 1932.

Fig. 1 shows the chart for Doctor Sweet's improved eye localizer as interpreted by the staff radiologist, showing clearly "the foreign body apparently out of the eyeball." The eye was anesthetized and placed in position before the giant magnet. The electric current was then closed and the piece of steel was drawn around the lens and under the iris, becoming entangled within its structure. An incision was made in the cornea at axis 90° with a keratome, the iris was withdrawn and excised, the Victor flexible extension was attached to the magnet and the small end was placed in the anterior chamber. The current was gently closed while the foreign body was removed. The iris pillars were replaced, atropine instilled, the eye bandaged, and the patient returned to the ward.

July 17, 1932, routine inspection was made. The pillars were in position. The usual reaction incident to these procedures was observed. One per cent atropine solution was instilled.

July 18, 1932, the reaction was subsiding, atropine was instilled and the eye bandaged. Between July 19, 1932, and July 22, 1932, he improved. On July 23, 1932, there were no signs of a traumatic cataract. On July 25, 1932, he was permitted to go home, the bandage removed. The reaction was subsiding. He was to attend the outdoor clinic and when he reported on August 1, 1932, the eye was quiet. Vision was 20/60. The eyes were to be refracted. August 5, 1932, the patient discontinued treatment, against advice.

March 8, 1933, central vision in the right eye was 20/60: 6/18; 30.0 visual loss. In the left eye it was 20/30: 6/9; 8.6 visual loss. The eye was quiet. He complained of photophobia from glare. Cruxite shade "B" was prescribed with correcting lens, which brought central vision to 20/20: 6/6. He had 100 per cent efficiency in each eye.

Case 2. E. R., a colored man from Laplace, Louisiana, four days previous to admission, was struck by something in the left eye. He received first aid at the Eye, Ear, Nose and Throat Hospital September 29, 1932. The left eye presented marked conjunctival irritation. The cornea was clear. There was a wound in the sclera 3 mm. to the left at 3 o'clock of the dial on the temporal side about 2 mm. in diameter. The anterior chamber was filled with blood. Intra-ocular tension was minus. There was no light perception or projection. Posterior anterior study with double exposure showed the presence of an intra-ocular foreign body. (See Figs. 2 and 3).

On September 30, 1932, the eye was enucleated and on October 2, 1932, he was discharged.

Case 3. G. W., aged 23, was struck in the right eye with birdshot while hunting, 72 hours before his admission. The right eye showed a cloudy and perforated cornea with a collapsed anterior chamber. The wound of entrance was in the center of the cornea, the lens fibers were in the stage of disintegration. Intra-ocular tension was minus. There was no light perception or projection. The eyeball was enucleated. Upon section the shot was found within the eyeball. (See Figs. 4 and 5).

Case 4. J. B., was struck in the right eye by a shot. The wound of entrance went through the cornea on the temporal side. Vitreous and blood

Fig. 4, Case 3

Lateral study showing the presence of a non-magnetic foreign body.

protruded from the wound. The eyeball was soft. There was no light perception or projection. Double exposure, posterior-anterior view showed the shot within the eyeball. This was made to check Dr. Sweet's localizer, which placed the shot 12 mm. behind the center of the cornea. The eye was enucleated. Upon section the shot was anterior to the central plane and below. (See Fig. 6).

Fig. 5, Case 3

A double exposure posterior-anterior study showing the foreign body within the eyeball.

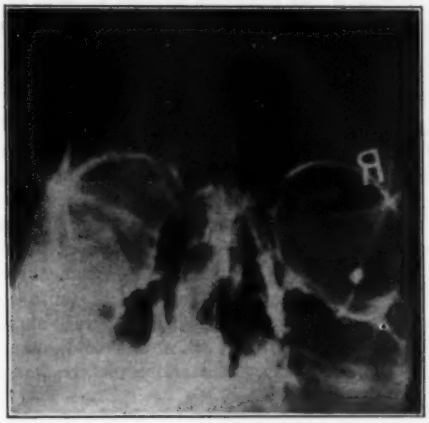

Fig. 6, Case 4

Double exposure method showing a bird shot within the eyeball near the central plane.

TRAUMATIC RUPTURE OF THE PAPILLARY MUSCLES OF THE MITRAL VALVES

A CASE REPORT*

W. C. PAYNE, M. D.
PENSACOLA, FLA.
AND
H. H. HARDY, JR., M. D.
NEW ORLEANS

Rupture of the papillary muscles of the heart is such an unusual occurrence that the following case is reported:

CASE REPORT

B. W., a white male, aged 51, was admitted to the accident room of the Pensacola Hospital, Pensacola, Florida, February 29, 1936, with a meagre history that he was an employee of an industrial plant in the city and while on duty on the second floor of the plant that morning a belt had slipped from its pulley on the first floor and he went below to re-apply the belt. He was alone on the ground floor, standing near the pulley when one of his fellow workers, who was on the floor above him, glanced through a hole in the floor and saw him suddenly fall. Realizing that something was wrong he rushed to his assistance and found the patient lying on the floor, apparently dead. It was found on close examination that the patient was not dead, but unconscious. An ambulance was called but before its arrival the patient began call-

*From the Surgical Service, Pensacola Hospital, Pensacola, Florida.

ing for help and exhibited a state of mild mania and was unable to explain what had happened. He was rushed to the hospital and en route manual restraint was necessary to maintain him on the ambulance stretcher.

In the accident room the patient continued to cry out for help, required restraint to hold him on the examining table, was semi-comatose, gasping for breath and his facial expression was one of agony and extreme apprehensiveness. Cyanosis was marked. There was no evidence of bleeding nor gross injury. The pulse was weak, thready, and too rapid to count. The blood pressure could not be recorded, and respiration was shallow, labored, and rapid. The skin was cold, clammy, and perspired freely. The entire picture was one of extreme shock.

Careful physical examination showed no signs of violence about the head or neck and no gross evidence of injury to the body or extremities. The pupils were normal in size and shape and reacted to light. There was no bleeding from the nasal, aural, or oral orifices. The lungs were clear and resonant throughout. The heart tones were very faint, rapid, and distant. Abdominal rigidity was absent. All reflexes were essentially normal. Anti-shock measures were rapidly instituted: morphine, external heat, glucose 5 per cent and normal saline as an infusion, cardiac and respiratory stimulants. Despite these measures his condition rapidly became progressively worse and he expired thirty minutes after admission, approximately one hour after having been striken.

Postmortem examination revealed the following: Gross examination of the body showed a well nourished, well developed male of about fifty years. No gross external evidence of disease nor injury was noted. The abdomen was opened and the peritoneum was shiny and glistening, free from adhesions and containing only the normal amount of free peritoneal fluid. All abdominal organs were normal in every respect.

The bladder was catheterized and only 1 c.c. of normal urine obtained. The skin was next dissected from the chest wall. A diffuse beginning ecchymotic area presented in the subcutaneous tissues over the third, fourth, fifth, and sixth ribs in the left midclavicular line. The third rib was fractured 2 cm. from its chondral junction. The fourth rib was separated at its costochondral junction. A transverse fracture of the sternum was found at the level of the third interspace without displacement. There was no effusion in either pleural cavity. The lungs were not collapsed. There was a small ecchymotic area 2.5 cm. by 2.5 cm. on the anterior surface of the left lung where it covered the left border of the heart. The pericardium presented a corresponding, subjacent, ecchymotic area over its anterior aspect 3 cm. above the apex. The pericardial sac was free from adhesions and contained about 20 c.c. of blood stained fluid. There was a marked contusion and ecchymosis over an area about 3 cm. in diameter on the anterior wall of the left ventricle. Intracardial pathology was confined to the left ventricle. Its anterior papillary muscle was ruptured at the endocardial attachment with the base lying free in the ventricular cavity. The posterior papillary muscle was only partially ruptured at its base. There was no damage to the mitral cusps nor the chordae tendinae. The coronary arteries were normal and no areas of infarction were found in the heart. No other pathology of note was found in the thoracic cavity and the cranial cavity was not opened (requested by the family).

DISCUSSION

In view of the pathologic findings and clinical history available it would appear that to throw on a belt to a rotating pulley this man used a large stick, and that in his attempt to apply the belt the stick became entangled in the machinery, striking him over the precordium. Such a stick was found at his side. When injured he was wearing a woolen union suit, shirt, sweater, overalls, and a leather coat. The thickness of these clothes absorbed the force of the blow, thus accounting for the lack of external evidence of injury on the chest wall.

Anatomically, the mitral valve lies posterior to the left margin of the sternum and its junction with the third rib, which area was directly posterior to the fractures present. Thus the maximum impact of the blow must have been directly over the mitral valve. It seems most reasonable to assume that the blow was received at that instant when the left ventricle was at the onset of systole, being at that time a closed cavity with the mitral valve shut. The sudden force of the blow increased the intraventricular pressure and rupture occurred at the point of least resistance, in this case the bases of the papillary muscles.

A review of the literature revealed only eight other cases. Wankel,[1] in 1911, reported a case and in a review of the literature found only four other cases. In the same year Teacher[2] reported one case. Four of these six cases showed a sclerosis of the coronary arteries and in two there was a thrombosis of these vessels. In one case they were reported as being negative, in another no mention of their condition was made. In 1921, Spalding and van Glahn[3] re-

ported a case of rupture of the posterior papillary muscle occurring spontaneously. On microscopic examination they found Treponema pallida in the sections taken from the end of the ruptured muscle. Fisher,[4] in 1922, reported a case of rupture of the papillary muscle associated with a coronary sclerosis. This patient survived for ten months. Van Glahn and Horowitz[5] reported a case in 1923, in which they found an infarction of the right and left ventricles and infarction at the site of rupture of the posterior papillary muscle. In addition there was sclerosis of the coronary arteries and a thrombosis of the right coronary artery.

In none of these cases was a history of trauma mentioned, all occurring spontaneously, in marked contrast to our case which had a traumatic basis and hence is the first case of traumatic rupture of the papillary muscles reported. In addition, in our case both the anterior and posterior muscles were ruptured, while in those reported the damage was limited to only one papillary muscle.

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NEW ORLEANS
Medical and Surgical Journal

Established 1844

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THE GRADUATE MEDICAL ASSEMBLY

Again we want to call attention to the important convocation that is going to be held in New Orleans next March. A reiteration of this is not inappropriate because not everybody, strange to say, reads the editorial columns of the Journal. To those who have not read what has been printed prior to this, we would again state that at this clinical meeting there will be collected together as fine a group of clinicians in all specialties of medicine as have ever appeared before such a meeting. These men come from all over the country and have been selected for their ability as teachers, as speakers and as outstanding workers in their special fields. They are prepared to give not only formal addresses but are expected also to participate in dry clinics and round table discussions. It will be not only a professional treat to hear these men but also it will be a real education. The completed program subject to minor alterations and changes will be found on page 390 and following pages.

Write the date in your engagement book; make arrangements now to attend this meeting. It will be well worth the time and the expense from the viewpoint of education, broadening of the mind, and sociability.

THE NEW YEAR

It is the pleasure of the Journal to wish to its readers a prosperous and happy New Year. May the next twelve months prove to you all the best that you have ever experienced physically, mentally and economically.

With the clearing of the clouds of financial distress that have gripped this country for the past five years undoubtedly the medical profession will be able to have a year which will free them from the worries and strain of financial difficulties, suffered in the last few years, not only by our profession, but by all professions and many to a much greater degree than the medical world has felt. Perhaps with the increasing number of men going into gainful work and occupations, although the rolls of those dependent upon the Government for material assistance do not seem to be markedly diminished, there will be less danger of the Government undertaking to enter the medical profession as a third party interested in giving medical aid to the detriment of the physician. Although the economic situation seems to be alleviated to a certain degree, nevertheless the medical profession must be continuously on the alert. It is at such a time as now when the possibility of forcing state medicine down the throats of the medical profession seems to be far distant that it may actually develop. In spite of the apparent remoteness of such a possibility it will never do for us to go to sleep at this time, or any time, because this idea of state medicine will certainly blossom forth sometime

and be thrust upon us possibly, in spite of our unwillingness to accept it, with all its harmful, obnoxious and disagreeable features.

DISEASES OF THE SPLEEN

A most interesting contribution which has emanated from the Combined Clinic in Splenopathy of the Vanderbilt Clinic and Presbyterian Hospital appeared in a recent number of the Journal of the American Medical Association.* This presentation illustrates well the value of intensive study of any condition or conditions which are usually looked upon as being of comparative minor moment. The first part of this symposium is by Whipple and shows the types of splenic disease that have been observed in six years. Banti's disease, purpura and hemolytic jaundice are by far the most common, representing nearly three-fourths of the 200 cases studied.

The second paper, by Thompson, has to do with hemolytic jaundice. The outstanding observation made by this writer is that there are two expressions of this particular syndrome, typical hemolytic jaundice which is a clear-cut, definite entity, completely and permanently cured by splenectomy; atypical hemolytic anemia includes a mixed collection of disease expressions associated with increased red cell destruction. These conditions are not relieved by splenectomy.

The third paper by Brown and Elliott on purpura gives a very complete outline report of cases of this particular condition. The patients were carefully studied and the treatment decided upon only after group consultation. These authors show that in thrombocytopenic purpura, with careful pre-operative treatment, splenectomy will cure and has only a low operative mortality. The improvement that takes place following operation is such that conservative treatment does not seem to be the proper form of therapy. Even if these patients have to undergo a major operation the improvement, according to the authors, justifies the risk.

The last contribution from this clinic, by Rousselot, has to do with Banti's syndrome. It is particularly thought-provocative because the pathologic physiology and the mechanism of production of the syndrome are adequately analyzed. This author feels that portal hypertension is present in all cases of Banti's syndrome. It may be due, as in 16 of his 31 cases, to a definite obstructive factor, which may be one of several intra-abdominal disorders. In this condition, Banti's disease, splenectomy is rather definitely indicated provided there is not severe antecedent liver damage.

The various authors quoted have demonstrated definitely that of the three most common causes of splenopathy the removal of the offending organ is of paramount importance for continuation of a healthy life. The selection of the patients for this procedure is a matter of cooperation and discussion between the surgeons and clinicians. The proper choosing of appropriate cases brings about a cure of the disease with a minimal amount of operative danger.

*Whipple, A. O.: Studies in splenopathy, J. A. M. A., 107:1775, 1936.
Thompson, W. P.: Hemolytic jaundice, ibid. p. 1776.
Brown, D. N. and Egerton, R. H.: The results of splenectomy in thrombocytopenic purpura, ibid. p. 1781.
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HOSPITAL STAFF TRANSACTIONS AND CLINICAL MEETINGS

GRADUATE SCHOOL
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NEW ORLEANS

The scientific meeting of December, 1936, was called by Doctor J. T. Nix, Director of the Graduate School. Doctors J. S. George and P. K. Champion presented the following paper:

TRENDS IN THERAPY OF CERVICAL CARCINOMA
A SURVEY OF LITERATURE

After brief inspection of the recent literature on the treatment of cervical carcinoma, it is evident that the methods in use are as numerous as the number of cancer clinics. Todd[2], attempting simplification, and believing many of the variations were refinements in technic and of minor importance, formulated the following classification:

1. The American School—high intensity, short application.
2. French—the Requard School—low intensity, long continuous application.

3. Scandinavian—Heyman School—high intensity, short intermittent application.

Both the latter employ 7000-8000 mg. hours. The cures reported by the Marie Curie Clinic at Paris are slightly higher than American Clinics, but the margin is slight. In evaluating the advantage one must remember the long experience and the great resources that they possess, and not be unduly influenced in favor of one plan of treatment.

In judging the results from the various clinics, it is necessary to take into consideration the personal variation as to the degree of extension as well as the type of classification. In this country either the Schmitz or the League of Nations are commonly employed, the former more frequently, but a simpler method and more fool-proof is a division into early and late. The former is equivalent to Schmitz I and II and League of Nations I and early II. The advanced group takes care of all the others.

Table I presents the five year cures of cancer clinics in this country in comparison to the Radium Institute at Paris. It illustrates vividly the excellent results obtained in early cervical carcinoma and shows how helpless therapy is in advanced cases. The tendency to report results in terms of operable and inoperable and use of the League of Nations classification, makes comparison difficult. The general adoption of the universal classification would facilitate correct evaluation of technical changes and aid progress.

Five Year Cures

Schmitz	Clinical Stages						
	I	II	III	IV	I&II	III&IV	Total
Schmitz[9]	80	41.9	16	1.7			19.14
Ward[11] 1919-30	70	52.8	21.1	0	54.5	18.5	‡18.5
Lynch & Bartlett[18] 1916-27	89.5	40.6	12.8	0	58.8	8.2	22.2
*Healy[19] 1924	58	26	14.3	0			‡20
League of Nations							
Lacassagne[20] 1923-26 Paris Radium Institute	86	42	30	1.5			33

*Classifies as early, border-line, advanced and palliative.
‡Absolute.

In treating cervical carcinoma, certain definite trends are apparent and may be summarized as follows:

1. The replacement of surgery by radiation.
2. The employment of more intensive radiation.
3. The adoption of the multiple dose roentgen therapy which until recently (1932) was only used in Europe.

At that time, Memorial Hospital3 introduced it into this country and started their experimental research to increase the amount of radiation delivered to the pelvis. The future advancement lies in improved method of increased radiation to the parametrium. It3 is estimated that 6-8 threshold erythema doses are required to cause regression of the parametrial extension and with this dose, with our present equipment, there is danger to the surrounding viscera in addition to the skin. With our present 200 K. V. machines, only 3-5 threshold erythema doses can be delivered safely. Eight hundred K. V. units are being experimented with but their definite value cannot be foretold as yet. Everting spongy types, infected sloughing craters and advanced cases respond to a cycle of roentgen radiation better than to radium and this facilitates the introduction of the latter. This will also lessen morbidity in post-radiation complications. Healy3 has stressed the danger of the maximum roentgen dose in obese patients. The fatty panniculus may become indurated and finally liquify. Healing then is very protracted. In the very advanced cases, in spite of extensive radiation, recurrences occur frequently within several months and the associated discomfort makes the prolongation of life questionable. Small palliative radiation to lessen discharge is better suited. Healy3 noticed clinically that in cases that were submitted to roentgen ray therapy immediately following radium application, the incidence of post-radiation complications was greatly increased. These phenomena occurred with such frequency that he advocates a free interval of several weeks. This rest enables the tissue to better withstand the following radiaion and reduces the sequelae.

TISSUE REACTION

The reaction of different histological types to radiation has been subject of much discussion and investigation and it is difficult to arrive at any definite conclusion. Most investigators carefully straddle the fence but give the impression that the histological type should not influence the treatment as to surgery or extensive radiation. Chambers[5] reports the highest per cent of cures in his grade III transitional, but the advantage is slight. The difference in either local cures or three year survivals of any of the histological type never exceeds 15 per cent. Auer[6] fails to find any significant variation in the reaction of the various grades to radiation[7]. In this institution, cervical carcinomas are graded transitional I, II, III, IV; grade I, presenting the most adult and differentiated form, grade IV the most anaplastic.

The great majority falling into grades II and III, 60 per cent. This distribution is generally accredited correct. The separation of the intermediate types between the anaplastic and the adult is frequently omitted. However, both classifications have their adherents.

SCREENING

With an attempt to increase the intensity of radiation, it was soon apparent that the Beta rays and soft Gamma rays caused excessive slough formation with a greater incidence of post-radiation fistulae formation. Auer[6] recently clearly showed that with little screening, 1 mm. of brass, the soft rays were only partly removed, resulting in extensive death of normal tissue as well as the neoplastic cells. The extensive fibrosis which developed inhibited proper vascularization of the regenerating epithelium prolonging healing, and promoting the chances of infection in the devitalized tissue. Greater filtering is thus advocated and filters of 2 mm. of gold or platinum, equivalent to about 4½ mm. of brass are considered as optimal. The advisability of using still greater screening is questionable as with the increase of filtration the hard Gamma rays are removed as well as the soft rays and the length of application must be correspondingly increased. To insure[8] complete removal of the soft Gamma rays, 11 mm. of platinum are required and through such a screen only 37 per cent of the hard rays will pass. The clumsiness of such a capsule, difficulty of application, and increased exposure necessary, renders such a filter useless clinically. The filtration in use at the leading cancer clinics is:

Healy[3], Memorial Hospital	2mm. of gold
Tausig[6], Barnard Free Skin and Cancer	2mm. of gold
Schmitz[9], Mercy Hospital, Chicago	2mm. of brass
Ward[1], Women's Hospital, New York City	1mm. of platinum

DOSAGE

The question of the amount of radiation to be received in the initial course, whether in divided doses or one large massive dose, must vary with the case, but it is fair to assume that a minimum of 4000-4500 mg. hrs. is required to cure an average early case. Auer[6] showed in a series he reported that those cases that received less than 4500 mg. hrs. of radiation had a local recurrence of 50 per cent as compared to a local recurrence of 14 per cent if over 4500 mg. hrs. were used. Thus we should not be afraid to employ heavy radiation as this is required to insure eradication of the local lesion. The inadequacy of administering 1200-2400 mg. hours to control the initial lesion has been well demonstrated in this hospital, where we have to deal with patients too ignorant to realize the seriousness of their condition and once having returned to their rural homes never appear again until the disease has hopelessly progressed. The procuring of the old hospital records will inevitably disclose the use of 1500-2500 mg. hours of radium as the only treatment employed. The adage that "God helps them that help themselves," certainly applies to the woman who on questioning frankly admits irregular intermenstrual vaginal bleeding for the past year without seeking the advice of a doctor.

METHOD MODIFICATIONS

In addition to the intracervical application of radium which has been discussed, various other refinements have been introduced in recent years. Of these the colpostat seems to be most promising. With this instrument a focus of radiation can be placed into each fornix with resulting radiation to the vaginal mucous membrane, portio of cervix, parametrium and surrounding structures. Arneson[15] has carefully determined the optimal radiation and advocates one third the intracervical dose in each fornix. Utilization of at least 2 mm. of platinum as a filter is advised. Another modification that has been proved to be of definite value is the use of the platinum needles. These may be inserted into the growth or at the cervico-vaginal junction. Healy[4] warns against a possibility of aiding the spread of the cancer cells in the healthy tissue and feels that this should be withheld until after the tissues have received radiaion therapy. It is most applicable for local recurrences.

TUMOR CLINIC TECHNIC

The technic of treatment of cervico-carcinoma is devised by the consultation of the Tumor Clinic Staff. These individual recommendations accompany the patient when admitted to the hospital. The usual procedure is as follows:

This plan was devised to enable the administration of sufficient radiation without increasing the danger of post-radiation complications, in particular fistulae and sloughs, with the use of 2 mm. of brass as a filter. The essential point in the treatment is the application of a divided dose of radium with a roentgen ray cycle interposed. To complete the first course of treatment the patient should have received 8800 roentgen units and 4800 mg. hrs. of radium. This is divided into four quarters, 4400 roentgen units and 2400 mg. hrs. of radium, each comprising one quarter. Whether a roentgen ray cycle or radium is first administered, depends on the individual case. As a general rule in patients with clinical stage I or II and relatively free of infection, the radium is applied first. Reciprocally in advanced or infected cases, a cycle of 4400 roentgen units is preferred. If the radium is applied first this is then followed with the roentgen ray cycle, on completion of this the patient returns to the hospital and receives a second

radium application, 2400 mg. hrs. which again is followed by a similar roentgen ray cycle of 4800 roentgen units. The patient is then followed in the Tumor Clinic from where further treatment is outlined.

	1	2	3	4
Early and clean cases	Radium 2400 mg. hrs.	X-ray 4800 roentgen	Radium 2400 mg hrs.	X-ray 4800 roentgen
Advanced, and or infected cases	X-ray 4800 roentgen hrs	Radium 2400 mg.	X-ray 4800 roentgen hrs.	Radium 2400 mg.

Totals X-ray —8800 roentgen units
Radium—4800 mg. hrs.

In a considerable number of patients the disease has so hopelessly progressed that the application of radium is impossible. Subjecting these patients to an intensive multiple dose roentgen therapy has proved injurious. The primary growth cannot be eradicated and renewed neoplastic activity in this dense fibrotic tissue generally occurs within a few months causing unnecessary suffering with occasional extensive slough forming. Palliative reduced deep therapy is administered. This will frequently relieve the annoying discharge and give some relief. Large foul discharging craters require frequently a rest period following the preliminary roentgen ray cycle before the radium can be applied.

ROENTGEN RAY UNIT

The deep roentgen ray unit is a 200 K.V. machine with a target distance of 50 cm. Filtration consists of ½ mm. of copper and 1 mm. of aluminum. It is appreciated that the filtration is inadequate and the target distance should preferably be greater, but this is impossible in view of the number of patients that must be treated. The preferred conditions would so increase the time of exposure necessary that with one air-cooled roentgen ray unit only a few patients could be satisfactorily treated.

Table II is self-explanatory and shows the large number of yearly admissions. The frequency of carcinoma of the uterus in relation to total gynecological admissions appears high. No explanation can be offered at this time. We were unable to separate carcinoma of the uterus but it is estimated that over 95 per cent were carcinoma of the cervix.

Table II

	Carcinoma of Uterus			Results			Total Gyn. Admissions	Ca. of Uterus as per cent of Admission
	W	C	Total	Imp.	Sta.	Died		
1927	112	194	306	160	128	18	2,858	10.7
1928	145	206	351	129	214	7	2,986	11.7
1929	200	222	422	211	198	13	3,817	11.0
1930	239	259	498	211	274	12	4,575	10.7
1931	288	290	578	214	340	21	4,655	12.4
1932	230	228	458	168	270	19	4,584	9.9
1933	233	222	455	215	219	18	5,693	7.9
*1934	134	105	239	115	115	6	3,157	7.5
‡1935	282	239	521	193	289	39	7,564	6.9
1936	229	250	479	147	309	23	7,750	6.1
								9.4 average

*From January to July 1, 1934.
‡Reports tabulated from July 1 to June 30 of following year.

The radium is filtered as present with 2 mm. of brass and exists in 50 mg. capsules. One hundred mg., if available, is inserted in one application in tandem. The packing off of the rectum and bladder is carefully attended to; the packs are moistened with merthiolate as this has a tendency to lessen infection. A retention catheter is routinely used to insure complete evacuation of the bladder.

The advantages derived from this method of application are:

1. Increased skin tolerance to roentgen ray.
2. Reduction of post-radiation complication particularly fistulae and sloughs.
3. Permits adequate radium application in spite of sub-optimal filtering.

Any outline or plan of treatment, though it may be applicable to a great majority of cases, must be altered in many instances. Every carcinoma of the cervix is individualized and modifications are introduced as necessary.

The greatest difficulty encountered is the follow-up. After one course of radium and roentgen ray the subjective complaints are frequently relieved and as the patient may live as far as 300 miles away, the need to return is seldom felt in spite of repeated notifications.

CONCLUSION

In conclusion, we realize that this method of treatment is not ideal, but with the present equipment, we believe yields the greatest percentage of cures that is possible. The tremendous number of patients and the limited facilities available necessitates tactics which are far from perfect. We are referring in particular to the target distance and filtering of the roentgen ray machine, and screening of the radium. We anticipate future innovations.

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HUTCHISON MEMORIAL CLINIC

Symposium on Peptic Ulcer: Conducted by the Department of Surgery, Dr. Mims Gage presiding. The discussion in part was as follows:

The Physiology of the Stomach and Duodenum as it Pertains to Peptic Ulcer—Dr. Henry Laurens (Department of Physiology): Peptic ulcers (acid ulcers) develop mainly in that portion of the gastrointestinal tract which is exposed to acid gastric juice and unusual mechanical forces. The etiology of peptic ulcer has been extensively studied by consideration of the morbid anatomy and histological details found in human ulcer and through experimental attempts to reduplicate such ulcers in animals. As a result, a host of conceptions as to etiological factors, most of them with sound logical arguments in their support, have been advanced. They may be grouped under the general headings of theories which: (1) postulate an initial devitalizing process with functional injury or necrobiosis of more superficial parts leading to their digestion, and (2) those which attribute them to a primary surface action due to mechanical or chemical insults. The first heading includes the views that it is due to: (a) thrombosis, to spasm of blood vessels with resulting infarction, or to preliminary inflammatory changes, (b) to removal of nerve influences with resulting trophic changes and (c) to toxic or bacterial actions on deep-seated structures. The second heading includes the suggestion that mechanical and chemical agents, such as trauma, natural mechanical forces, and the action of acid and pepsin are initial factors.

A reasonable degree of success in the production of experimental ulcers has been claimed for each of a variety of procedures, chiefly vascular, toxic, bacterial and neurological. They have, however, produced variable and frequently contradictory results in the hands of different experimenters, and it is generally agreed that characteristic chronic indurated ulcers are not easily produced. The trend of recent opinion favors the conclusion that two sets of factors are involved, namely, chemical and mechanical action, and a constitutional factor, coefficient or predisposition.

The chemical and mechanical factors seem to consist chiefly in increased acidity of the pyloroduodenal canal, caused by the elimination of the neutralizing factors in the duodenum. Of these, the mucosa and its secretion are the most important, the flow of bile and pancreatic juice occupying second and third places respectively. This chemical process is aided by the mechanical rubbing of hard indigestible particles and the persistent direction of a forcible stream of chyme against a circumscribed area of the duodenum. The vigor of gastric contraction, the size of the pyloric opening, and the alignment of a definite region of the duodenum where ulcer develops preferentially, are among the important mechanical factors in the production of duodenal ulcer.

Various procedures have been carried out for preventing natural neutralization of acid chyme in the duodenum. Some dogs are apparently immune and do not develop ulcers. A good deal of clinical experience indicates that constitutional tendencies play a considerable role in paving the way for action of irritants in the pyloro-duodenal canal. From this evidence, we are justified in speaking of peptic ulcer types which include high strung, nervous individuals manifesting symptoms indicative of mild sympathetic overstimulation. A genetic background may exist. Starting with the evidence of a parasympathetic center in the diencephalon and the relay of impulses via medullary centers to the stomach, Cushing supports the concept that lesions from the hypothalamus are prone to cause gastric erosions and ulcers. This accounts for their association with brain injuries and operations and for the fact that high-strung, emotional individuals, and those subject to unusual responsibilities, worries or anxiety are most apt to develop ulcers. The ultimate manner in which such influences act is generally attributed to modification in the resistance of the stomach mucosa against autodigestion. The age-long question as to why the stomach does not digest itself has

never been satisfactorily answered. The best explanation is that specific antiferments exist.

Beattie and Sheehan have also demonstrated that faradic stimulation of the tuber region in the fasting cat, under chloralose anesthesia, results in a rise of intragrastric pressure, with a subsequent increase in peristaltic movements of the stomach and that section of both vagi abolished the effect. Kabat et al, however, have shown that electrical stimulation of the lateral hypothalamic area in the unanesthetized cat causes cessation of peristalsis and loss of tone of the stomach and small intestine. Watts points out that removal of cortical influence by extirpation of both premotor areas results in increased motility of the gastrointestinal tract. Faradic stimulation of the premotor area and certain adjoining parts of the cerebral cortex initiates vigorous movements of all parts, indicating that cortical representation for the gastrointestinal tract is inhibitory.

Necheles et al have suggested that acetylcholine may be an important factor in the genesis of ulcer, in such areas in which end arteries are found, as in the distal part of the lesser curvature and in the duodenal cap.

The chief symptoms of peptic ulcer in which structural changes (such as hour-glass stomach, pyloric obstruction) do not significantly interfere with gastric performance are (a) those referable to hyperacidity of chyme and (b) those due to pylorospasm.

The pain of gastric ulcer is somewhat varied. Three types have been described, viz., (1) pain immediately after eating, (2) delayed pain (three to four hours after eating) and (3) nocturnal pains. The cause of the pain has been extensively discussed with the result that gastric and perigastric inflammation, distention, augmented tonus, pylorospasm, acid irritation, edema, and perineural infiltrations have all been suggested as causes. Most investigators agree that the pain is generally related to the acidity, and that a hypersensitivity of nerve terminals to normal acid, presumably in the ulcer region, is the chief factor concerned.

Pathology of Peptic Ulcer—Dr. W. H. Harris (Department of Pathology): The pathology of the peptic ulcer in contrast to other ulcerative lesions of the enteric tract, such as the ulcers of typhoid, bacillary dysentery, tuberculosis and ulcerative colitis, is unusual to the pathologist in that we have but little if any acquaintance with the pre-ulcerative or pathological changes which give rise to the actual ulceration. Microspically the observations of Askanazy are perhaps most replete. He points out four layers usually capable of demonstration: exudation (fibrinous), necrosis, granulation and cicatrization. While but little adjacent relation may be present polyps, and fibrin, catarrhal exudate and not infrequently hemorrhage may be seen on the ulcer surface extending for a slight distance into the tissues. Eosinophiles, lymphoid and plasma cells may predominate. Lesions of the blood vessels and nerves may be seen. Acute peri-arteritis, arteritis and endarteritis are common, also thrombosis, for which organization and even canalization may occur. While arteriosclerosis may at times occur in the young (Ophuls), on the other hand, in patients fifty and sixty years of age, often no sclerosis may be associated. The nerves are interrupted with the gastric wall destruction and acute or chronic neuritis or perineuritis may occur. Small neuromas resembling amputation neuromas may at times be observed. The epithelium may proliferate to form overhanging ledges or may grow downward along the surface. These must not be mistaken for tumor growth. A thin-walled base may lead to diverticula. Regeneration and complete healing may occur. Scar tissue and contractures may be extentisve; hourglass stomach or pyloric stenosis may result. Complications: Hemorrhage is common and of variable extent. Perforation occurs in 20 per cent and cancer, according to Wilson and McCarty, 71 per cent; Ewing 5 per cent; MacCallum 5 per cent and Karsner 10 per cent.

It is to be stressed that such descriptions apply to the pathology of the walls and contiguous structure of the ulcer and not to pathological changes which precede and explain ulcer formation, that is the pathogenesis.

There seems in my mind but little doubt that because of the absence of a definite sequence of "stage pathology" the mystery of the subject of pathogenesis of peptic ulcer is as yet so involved in such intricate and diverse explanations. Virchow's embolic theory, Rokitansky's nervous mechanism theory emphasized by Cushing's parasympathetic tuber nuclei observations and Watts and Fulton's experimental tuber nuclei lesions in monkeys with resultant gastric and duodenal ulcerations are frequently discussed. Linked with the parasympathetic disturbance are added certain of the endocrine "power-houses". The "elective affinity" of nonhemolytic streptococcus as observed by E. C. Rosenow, the diphtheria toxin experiments of Rosenow and Anderson, the gastrotoxic serum (really gastro-mucosa-lytic) experiments of Bolton later confirmed by Karsner, are another group. The various irritants, mechanical, physical and chemical, extending from the rough fodder ingested too early by nursing calves, to the hot food tasting of the cook are advanced. All of these and more form an array of etiologic factors only exceeded, I might conjecture, by those of pellagra. (Lantern slides shown).

The Value of Roentgen Ray in Peptic Ulcer—Dr. J. N. Ané (Department of Radiology): The value of roentgen ray in the diagnosis of gastric and duodenal ulcers is well known. In a series of 500 cases Carman demonstrated that he was able to

make accurate diagnoses in about 98 per cent. We depend for diagnosis upon the additions or subtractions of normal contour of the stomach and signs which depend on altered physiological function of the stomach. I have reference to the usual niche formation in penetrating gastric ulcer, to the accessory cavity in perforation, and to the spasm which is not relaxed by atropine, as in duodenal ulcer. There are four types: (1) The mucous slit or small linear area of erosion; (2) the penetrating ulcer; (3) perforating ulcer with formation of accessory cavity, and (4) carcinomatous ulcer. In the case of duodenal ulcer we do not, as a rule, find the niche as frequently as in the stomach. This is believed to be due to the fact that in duodenal ulced the mucosa is smoother and more regular than is the case of the stomach. It is quite possible to have an ulcer of considerable duration with considerable amount of scar tissue and still have a minimum amount of crater formation. In the duodenum we find more marked spasm. Our indirect signs depend upon: (1) the occurrence of spasm; (2) the incisura; (3) an hour-glass stomach, or (4) generalized gastric spasm. There may be increased peristalsis. On the other hand it may be the reverse. Alterations in motility depend upon the location of the ulcer. Ulcers located at the outlet will naturally result in six and frequently twenty-four hour retention of the motor meal. Some may give rise to a patulous pylorus. There are two methods of examination, the first a combination fluoroscopic and plate examination, the second, the method of Cole of New York in which serial films are made. One of the necessary requirements of this method is a minimal number of ten films made in each of a number of positions: prone, supine and erect. (Lantern slides shown).

The Medical Treatment of Gastro-Duodenal Ulcer—Dr. D. C. Browne (Department of Medicine): The diagnosis of the chronic recurrent ulcer having been satisfactorily established, the choice of treatment falls distinctly into one of two fields, either medical or surgical. It may be safely stated that treatment of the uncomplicated case of peptic ulcer is essentially medical and only when complications occur, as you will hear discussed later, is surgical intervention indicated. Certain types are particularly adaptable to conservative treatment. These include ulcers in your younger people and in those whose nutritional status and general health has been well preserved. A less favorable group are those occurring beyond the age of forty-five which give evidence of circulatory changes, and accompanying disease in other organs, or where economic factors may seriously interfere with proper after-care.

With our present conception of the etiology of peptic ulcers, the treatment readily divides itself into two distinct parts, that which has to do with the immediate control and healing of the ulcer, and second, the management of the case following intensive treatment with a view to prevent recurrences.

Much discussion has been indulged in with respect to the relative merits of ambulatory and bed rest care in handling the immediate attack, but careful consideration of statistics will show conclusively that the more desirable regime requires rest in bed and often isolation. It is fundamental to the success of the treatment that the objective to be kept clearly in mind, namely the removal of all sources of irritation from the ulcer-bearing area, bringing about rest and encouraging relaxation of the pylorospasm, in consequence reestablishing normal secretory function and neutralization mechanism of the stomach. Any method which does not adhere to these fundamentals is doomed to failure in some degree. The detailed method which the clinician may select to accomplish these objectives I do not feel is so important providing they are effective. To discuss the relative merits of various dietetic plans and their rationale would require much time and is impractical. In my hands adhering to marked restriction in the early stages of treatment has yielded best results, yet I recognize that more liberal plans such as Lenhartz diet may in selected cases produce equally satisfactory results. Whether we wish to accept the acid theory or not, clinically the control of the acid factor is paramount. Many clinicians do not feel the use of antiacids is necessary and certainly the indiscriminate use of sodium bicarbonate is accompanied by some danger. The proper administration of calcium carbonate or aluminum hydroxide facilitates the treatment and should be used as needed to control the acidity. Pylorospasm is necessary, for on the proper pyloric function depends the most important known factor in the neutralization mechanism of the stomach. Tincture of belladonna probably lends itself as admirably here as any drug. Probably a few remarks should be made concerning the more recent use of histidine and nonspecific proteins, since considerable confusion exists in the literature as to their value. It may be conservatively stated, I believe, that although there is some rationale for the use, they must at present be considered as adjuncts in treatment and not to replace accepted methods.

The immediate attack having been successfully controlled, an equally important phase of treatment presents itself, which includes the removal of the factors which may bring about a recurrence, such as foci of infection especially in the upper respiratory tract and oral cavity, dietetic indiscretion, excessive use of cigarettes and tobacco, undue nervous stress. Failure to "follow through" the ulcer case and educate the patient probably accounts for the great majority of our failures.

The patient must be made to understand that there are certain groups which are more susceptible to peptic ulceration and on proper consideration of this, with the other mentioned factors, depends his future. Until we, as clinicians, accept this attitude we will be faced with the criticisms which have rightfully been directed toward the medical treatment of peptic ulcer.

Dr. I. M. Gage of the Department of Surgery discussed "Complications of Peptic Ulcer."

The Surgical Treatment of Peptic Ulcer—Dr. Alton Ochsner (Department of Surgery): There is relatively little left for anyone to say because as you probably know, we, the Department of Surgery, believe that there is no surgical treatment for peptic ulcer per se. Dr. Browne has emphasized the predisposing constitutional factor and tissue susceptibility. We feel that the surgeon can do nothing to judge tissue susceptibility. Gastroeterostomy is probably the most frequently performed operation on the stomach today and we feel that it is the operation which should be done least frequently. Therefore the surgical treatment consists of the treatment of complications. Dr. Gage has mentioned perforation and hemorrhage. Other complications in which surgical therapy is justified are obstruction and suspected malignant change. The patient who has obstruction, whether gastric or duodenal, necessarily must have some type of operation to relieve the obstruction; otherwise he will die of starvation. In an individual with hyperacidity, the performance of a gastrojejunostomy is not without danger because it permits the acid gastric chyme to be emptied into the jejunum which is less resistant to the digestive action of the gastric juice than the gastric or duodenal mucosa. Either a pyloroplasty, or, if a pyloroplasty is not possibly, and in many instances it is not because of marked scarring, a gastroduodenostomy should be done because the duodenum is accustomed to receiving the gastric chyme. It has been definitely shown that the susceptibility to peptic digestion increases with the aboral distance from the duodenum. The ileum is proportionately more susceptible than the stomach and duodenum. If a patient has a normal acidity a gastroenterostomy should not be done because that same individual has a constitutional predisposition and the chances of his developing a jejunal ulcer are great. What the actual incidence of jejunal ulcer is, one cannot say. In some series the incidence is reported as 2 to 5 per cent. It is possible that in those series in which 20 to 25 per cent are not relieved by the operation that the persistance of symptoms is due to unrecognized jejunal ulcers. Most of you are familiar with the work of Dr. De Bakey who performed an operation first suggested by Dr. von Eiselberg, the so-called pyloric exclusion operation, who found that in patients with pyloric occlusion produced by a cicatrizing ulcer a gastroenterostomy relieved the patient. He suggested that this be mimicked artificially in all ulcer patients and that the pylorus be divided, the stomach and duodenum closed and a gastroenterostomy performed. The operation was very quickly abandoned because the incidence of jejunal ulceration following gastroenterostomy was very high. Undoubtedly the different results obtained following gastroenterostomy in patients with artificially produced pyloric occlusions and those with spontaneous occlusions, are due to the fact that in the former group the gastric acidity is normal or high, whereas in the latter group there is hypoacidity or achlorhydria because of atrophic gastritis which is the result of prolonged gastric retention. Another indication for surgical therapy is suspected malignant change. Every greater curvature ulcer should be suspected as being malignant and these patients should be operated on immediately. In the individual who resists therapy, particularly if that individual is past forty years of age, we believe that the patient should also be operated on, not on account of the ulcer but because of malignant change. It is surprising in how many of our cases of benign calloused ulcers operated on, microscopic evidence of beginning malignant change has been found. We therefore practice preventive medicine by resecting these callous ulcers, particularly if that individual is in the cancer age. Of course the individual who has a chronic calloused gastric ulcer should be given the advantage of an exploration and probable resection because of the great danger of malignant change occurring in this type of ulcer, especially if the ulcer is on the greater curvature. The surgical treatment of peptic ulcer therefore resolves itself into the treatment of the complicating lesion.

FRENCH HOSPITAL

A regular meeting of the French Hospital Staff was called to order with Dr. J. Palermo presiding in the absence of Dr. Strange.

Dr. Palermo mentioned a case which had been diagnosed and treated as tuberculous laryngitis for several years without improvement. Questioning the diagnosis of tuberculous laryngitis and finding Vincent's spirochetal organisms in a direct smear, he has been treating the case as one of Vincent's infection, by topical application. The case has improved remarkably. No biopsy has been taken. Dr. Ader discussed the case.

Dr. H. B. Alsobrook presented a paper on "The Value and Technic of Tubal Insufflation, or Rubin Test." He opened his talk with the indications for the test as follows:

1. Primary sterility, where contributing causes have been eliminated and some operative procedure is contemplated.

2. Primary sterility in which the patient is known to have passed through a gonorrheal pelvic

infection soon after marriage and is at the time of the inquiry free of pelvic symptoms.

3. Sterility following a pelvic exudate or abscess complicating a puerperium or abortion.

4. Primary sterility caused by appendiceal infection.

5. One child sterility.

6. After one whole tube and part of another have been removed for hydrosalpinx or pyosalpinx.

7. After unilateral ectopic pregnancy to determine the patency of the residual tube.

8. After salpingostomy to determine the success of the operation which was calculated to effect an opening of occluded tubes.

9. After sterilization by tube ligation.

10. After multiple myomectomy in nullipara to make certain that at least the uterine ostium of the tube has been left intact.

11. Sterility of long standing where pelvic masses are palpable and clinically diagnosticated as fibroids or "chronic disease of the adnexa".

12. As a therapeutic measure to eliminate the tubal factor in sterility.

13. Roentgen ray of pelvic organs.

14. Means of producing pneumoperitoneum.

The paper stated the following contra-indication:

1. Menstruation.
2. Uterine bleeding.
3. Pelvic inflammatory diseases.
   (a) Acute.
   (b) Subacute.
4. Heart diseases and pulmonary diseases.
5. Curettage and uterine instrumentation.
6. Pregnancies.
   (a) Uterine.
   (b) Extra-uterine.

The technic includes air, oxygen, carbondioxide, iodized oils and is an office procedure. The patency of the tubes is determined by:

1. Shoulder or interscapular pain by the patient.
2. Sub-diaphragmatic pain.
   (a) Auscultation with stethoscope over the adnexal region for the outflow of air.
   (b) Fluoroscope.
   (c) Roentgen ray.

The following conditions may be listed as limitations of the test:

1. Normal patency.
2. Complete obstruction.
3. Partial obstruction without tubal damage.
4. Partial obstruction with tubal damage.
5. Spasm.

The danger is rupture of the adnexae. This is somewhat eliminated if the pressure of the inflow of air is not above 150 c. mm. of mercury.

Dr. Alsobrook's paper was followed by a practical demonstration of the procedure of the test. A simple device was made whereby the oxygen tank is connected to the blood pressure cuff and distended with oxygen until the pressure in the bag reaches a height of 150 cubic mm. of mercury in the sphygmomanometer. The oxygen in the bag is then forced through a cannular into the uterine cavity and salpinges.

Dr. Zander congratulated Dr. Alsobrook on the simple apparatus which he has devised, and stated that in using the Rubin test he has found that 10 c.c. of iodized oil gives the same results as 20 c.c., but without the discomfort caused by the greater amount.

Dr. Gordon asked how long iodized solution may remain in the pelvis. Dr. Alsobrook, in answer to Dr. Gordon's question stated that Rubin lipiodol in a pelvis two years after it had been injected. Dr. Gordon added that on a cystoscopic examination lipiodal globules had been found in the pelvis three years after injection. Dr. Palermo on behalf of the staff thanked Dr. Alsobrook for a very interesting and beneficial paper and discussion.

The election of officers for the coming year was then opened. The following officers were elected:

Dr. R. L. Gordon, Chairman of Staff.

Dr. J. B. Gooch, Vice-Chairman.

Dr. A. J. Rando, Secretary and Treasurer.

The new officers were then installed into office and the meeting adjourned.

E. A. Baitchman, Ass't. to Sec.

MERCY HOSPITAL

The regular monthly meeting of the Mercy Hospital Staff was called to order on Wednesday, December 2, 1936, by Dr. Geo. Hauser, Chairman. This was a joint meeting with the New Orleans Gynecological and Obstetrical Society. Dr. Hauser gave the chair to Dr. Philip J. Carter, President of the New Orleans Gynecological and Obstetrical Society.

There was an interesting scientific program. Dr. George Mayer presented "Simplified Technic for Vaginal Hysterectomy" (moving picture). His paper was discussed by Dr. Carter. Dr. Curtis Tyrone presented "Lacerations of Rectal-Vaginal Septum: Treatment and End Results." Drs. Dicks, Hanckes and Carter discussed this paper. Dr. Charles Odom then presented "Epidural Anesthesia and Its Relation to Obstetrics." Dr. Carter discussed this paper.

This meeting was exceptionally well attended and the Mercy Hospital Staff wishes to thank the New Orleans Gynecological and Obstetrical Society for their excellent presentations.

Lloyd Hanckes, M. D., Sec.

HOTEL DIEU

The regular monthly meeting of the Staff of Hotel Dieu was held on Monday, November 16, 1936, at 8:00 p. m. in the Nurses' Lecture Room

of Hotel Dieu. The meeting was called to order by the President, Dr. E. H. Walet and with the Secretary, Dr. J. A. LaNasa, at the desk.

The Scientific Program consisted of:

"The Clinical Application of the Ascheim-Zondek and Friedman Tests", Dr. M. L. Stadiem. Discussed by Drs. Couret and Walet.

"Management of Right Occipito-Posterior Position", Dr. C. J. Wheeler. Discussed by Drs. Gorman, Salatich and Stadiem.

"The Reaction from Anti-Syphilitic Therapy", Dr. J. K. Howles. Discussed by Drs. Mouledous, Gordon and Danna .

SCHUMPERT SANITARIUM

The Schumpert Staff meeting was called to order on November 23, 1936, at 8:00 p. m. by Dr. George Garrett, after dinner in the dining hall. Nineteen staff members were present.

The minutes of the last meeting were read and adopted.

The application of Dr. R. B. DeLee for membership on the staff was taken up under unfinished business. In the absence of the membership chairman, Dr. Norfleet made a motion that Dr. DeLee's application be accepted subject to approval of the membership committee. This was duly seconded and passed.

Dr. George Garrett announced that the sanitarium had secured, for use of the staff, new items of equipment which include short wave diathermy, infra-red lamp, a new obstetric delivery table, operating room light and emergency light, and a completely equipped newborn nursery.

The secretary read a letter from Dr. N. J. Bender, applying for staff membership. This letter was referred to the membership committee.

The scientific program was as follows:

Dr. George Wolfe presented and demonstrated a case of Schuller-Christian's disease, or lipoid histiocytosis, in a seven year old girl. The initial symptoms included polydipsia and polyuria, to be followed about one year ago by prominence of the right eye and dizziness. These symptoms continued until recent admission to the Shreveport Charity Hospital. Roentgen ray examination then revealed areas of bone defect over the skull, completing the classical triad of diabetes insipidus, exophthalmos and defects of the skull bones. Dr. Wolfe pointed out that the increasing number of these cases being reported, 24 within the past 18 months, indicates that the condition occurs more frequently than formerly thought.

Treatment of this child has consisted of roentgen ray therapy of the skull and administration of 0.5 c.c. pitressin twice daily. The polyuria has been alleviated by pitressin administration, the output dropping from three or four liters to one-half liter per day.

The case presentation was discussed by Drs. Gowen and Lucas.

Dr. Chas. Gowen discussed the results of phrenic nerve crush in a case of left apical tuberculosis with cavitation, explaining the modus operandi of this procedure, which in this instance was followed by rapid clinical improvement. The case was discussed by Drs. Norfleet, Walke and Wolfe.

The deaths for the month were discussed.

New business was confined to election of officers. Immediately preceding the election, Dr. George Garrett thanked the staff members for their cooperation during the past year, wishing for the incoming officers this same cooperation.

The following officers were nominated and unanimously elected; for president, Dr. T. J. Fleming; vice-president, Dr. Harold Quinn; for secretary-treasurer, Dr. W. L. Atkins.

Dr. Fleming expressed his appreciation for his election and asked for continued cooperation in building up interesting programs and interesting more doctors in attendance.

C. H. Webb, M. D., Sec.-Treas.

NORTH LOUISIANA SANITARIUM

The meeting was called to order on November 24, 1936, by the President with 23 members present. After disposal of routine business, attention was turned to the scientific program.

Dr. Cassity reported a case of a brain injury. The patient received a blow over the right parietal region with a beer bottle and soon developed symptoms of injury to the motor area of the brain. Roentgen ray pictures were of no help in diagnosis, showing merely a fracture and not indicating an appreciable depresson of the fragments. At operation it was found that there was marked depression of the fracture and destruction of the brain tissue immediately beneath the fracture. The fragments were replaced and the patient made an uneventful postoperative recovery. The case was discussed by Drs. Rigby and Stewart.

Dr. Lucas presented a report of an infant whose symptoms were suggestive of congenital heart disease. At autopsy the heart was found to be slightly enlarged and containing a patent foramen ovale. As a complete surprise the examination of the stomach showed a definite hypertrophy of the pyloric ring and it was Dr. Lucas' opinion that in a short while the patient would have developed the symptom complex of hypertrophic pyloric stenosis. The case was discussed by Drs. Wolfe and Hargrove.

Harry M. Trifon, M. D., Sec.

SHREVEPORT CHARITY HOSPITAL

A splendid dinner was enjoyed by a great many members of the Staff of the Hospital on November 18, 1936, thirteen of whom adjourned to the assembly room for the scientific program. Dr.

Gowen, the president, called the meeting to order, with Dr. Blandino in the secretary's chair, the regular secretary being out of the city. There being no new or old business, the scientific program was opened, after Dr. Sanderson spoke on the necessity of every staff member's cooperation in reducing the hospital expenses. He reminded the staff that the hospital is considerably behind in its budget and pointed out several ways in which economics could be enforced.

Dr. Weber presented an interesting case of pyelitis in a negro male, who also was afflicted with a polyglandular disorder which manifested itself by hypoplasia of the genitalia and the presence of female secondary sex characteristics.

The second case, presented by Dr. Boggs, was that of a white male, who, on a previous admission, had been considered as a case of peptic ulcer although roentgen ray studies did not corroborate such a diagnosis. His symptoms improved on the Sippy diet and he was discharged. The patient was readmitted on November 11, 1936, in a moderate degree of shock and in the view of a history of a possible peptic ulcer in the past, a tentative diagnosis of ruptured gastric ulcer was made. Roentgen ray of the abdomen revealed no free air, but did show a dense shadow at the base of the right lung. Subsequent roentgen ray films revealed that this density spread throughout the right chest and attempts at aspiration were negative for fluid. Dr. Gowen considered the possibility of a ruptured subphrenic abscess or encapsulated fluid. He gave a few pointers in connection with thoracentesis and made a few remarks regarding roentgen ray technic when fluid is suspected. The case was discussed further by Drs. Scott, Gray, Craig and Sanderson. No definite diagnosis could as yet be made.

S. G. Wolfe, M. D., Sec.

THE SHREVEPORT EYE, EAR, NOSE AND THROAT SOCIETY

The Shreveport Eye, Ear, Nose and Throat Society met in regular session at the Charity Hospital, the evening of Monday, December 7, 1936, at 7:30 o'clock. The president, Dr. L. W. Gorton, presided. The following members were present: Dr. A. H. Mann of Texarkana, Arkansas; Captains Burns and Corliss of Barksdale Field; Drs. V. R. Hurst, Earl Greene, and E. E. Willison of Longview, Texas; and Drs. L. W. Gorton, T. D. Boaz, J. L. Scales, W. L. Atkins, I. Henry Smith, John T. Grebbin, and J. A. Wilkinson, of Shreveport.

Captain Burns presented a patient who had received a lacerating wound of the cornea, as a result of an automobile accident, in which the eye was injured by the broken windshield. He covered the wound with a conjunctival flap which resulted in perfect union and a useful eye.

Captain Corliss presented a case of chronic uveitis of undetermined origin. Patient is slowly recovering under large doses of iodides.

Dr. Scales presented a patient who had received an acid burn of the cornea and conjunctiva, which resulted in considerable inflammation and hypopyon. He incised the cornea from limbus to limbus in the lower portion evacuating considerable pus. Following this the eye is recovering in a satisfactory manner.

Dr. Scales also showed an old colored man who was blind in the right eye following an unsuccessful cataract operation and blind in the left eye due to an unoperated cataract with angular iris adhesions. He had performed an iridectomy several weeks ago and plans to operate again and, if possible, free the iris from the lens and remove the cataract in its capsule.

Dr. Atkins presented a white man with bilateral uveitis of several weeks standing. In the absence of any known focus of infection, he had used iodides and several kinds of foreign protein. One eye was practically well and the other slowly improving.

Dr. Atkins also showed a colored man who had a discharging fistula and osteomyelitis in the wall of the frontal sinus. He plans to do a radical frontal operation and remove all diseased bone, establishing a free drainage into the nose.

Dr. Hurst showed a colored woman who became blind in the left eye rather suddenly. The eye appears normal in every respect. He was not certain of the cause or the prognosis, but suggested that it might be retrobulbar neuritis and possible multiple sclerosis.

J. A. Wilkinson, M. D., Sec.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

CALENDAR

JANUARY 4. Board of Directors, Orleans Parish Medical Society, 8 p. m.

JANUARY 4. Eye, Ear, Nose and Throat Hospital Staff, 8 p. m.

JANUARY 4. Pathologic Conference, Hotel Dieu, 8:15 p. m.

JANUARY 6. Clinicopathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

JANUARY 6. Mercy Hospital Staff, 8 p. m.

JANUARY 8. French Hospital Staff, 8 p. m.

JANUARY 11. ORLEANS PARISH MEDICAL SOCIETY, 8 p. m. Installation of Officers, 1937.

JANUARY 12. Charity Hospital Dental Staff, 8 p. m.

JANUARY 13. Touro Infirmary Staff, 8 p. m.

JANUARY 15. I. C. R. R. Hospital Staff, 12 noon.

JANUARY 18. Hotel Dieu Staff, 8 p. m.

JANUARY 18. Joint meeting of the Orleans Parish Medical Society and the New Orleans Gynecological and Obstetrical Society, 8 p. m.

JANUARY 19. Charity Hospital Medical Staff, 8 p. m.

JANUARY 20. Clinicopathologic Conference Touro Infirmary, 11:15 a. m. to 12:15 p. m.

JANUARY 20. Charity Hospital Surgical Staff, 8 p. m.

JANUARY 20. 1st and 2nd District Dental Society, 8. p. m.

JANUARY 21. Eye, Ear, Nose and Throat Club, 8 p. m.

JANUARY 25. ORLEANS PARISH MEDICAL SOCIETY, 8 p. m.

JANUARY 26. Baptist Hospital, 8 p. m.

JANUARY 27. Clinicopathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

During the month of December the Society held one meeting which was the eleventh Stanford E. Chaille Memorial Oration. This meeting was exceptionally well attended, the following program being presented:

The Etiology and Treatment of Peptic Ulcer.
By: ..... Dr. Donald C. Balfour, Mayo Clinic, Rochester, Minnesota.

The Administration of Fluid in the Surgical Patient.
By: .....Dr. Frederick A. Coller, Professor of Surgery, University of Michigan.

Acute Abdominal Emergencies.
By: Dr. Arthur W. Allen, Clinical Professor of Surgery, Harvard University.

This meeting served as the election meeting when the following candidates were announced to the Society as having been elected at the annual election held Saturday, December 12, 1936:

President—Dr. James T. Nix.
First Vice-President—Dr. Shirley C. Lyons.
Second Vice-President—Dr. George H. Hauser.
Third Vice-President—Dr. Edgar Burns.
Secretary—Dr. Gilbert C. Anderson.
Treasurer—Dr. Edwin H. Lawson.
Librarian—Dr. Alton Ochsner.

ADDITIONAL MEMBERS
BOARD OF DIRECTORS

Dr. Donovan C. Browne.
Dr. Frederick L. Fenno.
Dr. Francis E. LeJeune.

Dr. Isidore Cohn was a guest speaker before the Southwest Medical Association at its meeting held in El Paso, Texas on November 19 and 20, 1936.

Dr. John H. Musser has been appointed a member of the Bi-Centennial Committee of the University of Pennsylvania, and will serve on a committee which is to plan the celebration of the University's 200th aniversary in 1940.

The meeting of the Southern Medical Association, which was held recently in Baltimore, was one of the most successful meetings which has ever been held. The registration exceeded 3500, and at the close of the meeting New Orleans was selected as the next meeting place. The dates will be November 29 through December 3, 1937. Dr. Alton Ochsner, who has served for two years as secretary of the Section on Surgery, was elected Chairman of this section at the Baltimore meeting. Other members of the Society who attended this meeting are: Drs. Ruth G. Aleman, C. C. Bass, W. R. Buffington, W. B. Clark, Chas. F. Craig, Jos. S. D'Antoni, L. R. DeBuys, T. J. Dimitry, E. C. Faust, John T. Halsey, Geo. H. Hauser, E. Harold Hinman, James K. Howles, J. Raymond Hume, Wilkes A. Knolle, Edwin H. Lawson, A. L. Levin, M. J. Magruder, Alton Ochsner, Walter J. Otis, Neal Owens, Rawley M. Penick, Jr., John T. Sanders, Suzanne Schaefer, H. Theodore Simon, H. R. Unsworth, M. T. Van Studdiford, J. Ross Veal, E. von Haam, Wm. A. Wagner, and Robert M. Willoughby.

Medical Defense begins only after your State dues are received. Please mail check for $18.00 for 1937 dues in Parish and State Societies.

TREASURER'S REPORT

ACTUAL BOOK BALANCE: 10/31/36:	$1,442.17
November credits:	$ 772.96
Amount credited in error:	$ 110.95
TOTAL CREDITS:	$2,326.08
November expenditures:	$ 556.38
ACTUAL BOOK BALANCE: 11/30/36	$1,769.70

LIBRARIAN'S REPORT

During the month of November, 125 volumes were added to the Library. Of these 84 were received by gift, 20 by binding, 5 by purchase and 16 from the New Orleans Medical and Surgical Journal. Notation of new titles of recent date is given below.

The Library has loaned to doctors 755 books and journals during November, or more than 1½ to each active member of the Society. In addition 896 items have been loaned to students making a total of 1,651. These figures do not include the great use of books and journals within the Reading Rooms.

On request of physicians, members of the staff have collected material on the following subjects during the month:

Health and economic depression.
Cryptorchidism
Vomiting in infancy.
Results of sympathectomy.
Chemistry of colloids.
Light therapy in tuberculosis.
Carcinoma of lingual thyroid.
Angiospasm.
Pulmonary embolism due to dilatation and curettage.
Organized medicine.
Treatment of obesity.
Atropine in obstetrics.
Fracture of sternum.
History of treatment of tuberculosis.
Carcinoma of small intestine and appendix.
Tubo-ovarian abscess.

NEW BOOKS—November

Cabot, Hugh—Modern Urology. 2 v. 1936.

Holmes, G. W. and Ruggles, H. E.—Roentgen Interpretation. 1936.

Washington Institute of Medicine. v. 8. 1936.

Macleod, J. J. R.—Fundamentals of Human Physiology. 1936.

Spivack, J. L.—Surgical Technique of Abdominal Operations. 1936.

Sadler, W. S.—Theory and Practice of Psychiatry. 1936.

Luten, Drew—Clinical Use of Digitalis. 1936.

Wesson, M. B.—Urologic Roentgenology. 1936.

Lawrence, R. D.—Diabetic Life. 1936.

Houston, W. R.—Art of Treatment. 1936.

Bailey, Hamilton—Demonstration of Physical Signs in Clinical Surgery. 1935.

Kerley, Peter—Recent Advances in Radiology. 1936.

Galdston, Iago—Medicine and Mankind. 1936.

Sachs, Bernard—Keeping your Child Normal. 1936.

American Can Company—Facts About Commercially Canned Foods. 1936.

Tenenbaum, Joseph—The Riddle of Woman. 1936.

Gilbert C. Anderson, M. D., Secretary.

LOUISIANA STATE MEDICAL SOCIETY NEWS

PROGRAM

THE NEW ORLEANS GRADUATE MEDICAL ASSEMBLY

March 8-11, 1937

Hyder F. Brewster, M. D., General Chairman.

Monday, March 8

All Sessions of the Assembly will be held at the Roosevelt Hotel

8:00 to 10:00 A. M.	REGISTRATION—VIEW EXHIBITS.

MORNING SESSION

10:00 to 11:00 A. M.	Opening Exercises. T. B. Sellers, M. D., Presiding. Invocation—Address of Welcome—Recognition of City, State and Medical Officials.
11:00 to 11:55 A. M.	John A. Kolmer, M. D., Pathologist. Immunity and Vaccination against Infantile Paralysis.

LUNCHEONS AND ROUND TABLE DISCUSSIONS

Room E. 12:00 to 1:40 P. M.	*Gynecology*: George Gray Ward, M. D. Staff Conference and Surgical Audit (Lantern Slides).
Dome Room 12:00 to 1:40 P. M.	*Medicine*: George M. Piersol, M. D. The Value of Laboratory Studies in the Management of Nephritis.
Room C. 12:00 to 1:40 P. M.	*Neurology*: Lewis J. Pollock, M. D. The Physiology of Referred Visceral Pain.
Room B. 12:00 to 1:40 P. M.	*Obstetrics*: H. J. Stander, M. D. Postpartum Hemorrhage.

AFTERNOON SESSION

2:00 to 2:45 P. M.	Lewis J. Pollock, M. D., Neurologist. Diseases of the Nervous System Producing Dysfunction of Other Organs and Dysfunction of Other Organs Producing or Simulating Diseases of the Nervous System.
2:50 to 3:30 P. M.	George Gray Ward, M. D., Gynecologist. Vaginal Plastics (Lantern Slides).
Intermission. 3:30 to 3:50 P. M.	View Technical and Scientific Exhibits.
3:50 to 4:35 P. M.	Hugh Trout, M. D., Surgeon. Cancer of the Breast.
4:40 to 5:10 P. M.	H. J. Stander, M. D., Obstetrician. Cardiac Disease and Pregnancy.
5:10 to 8:00 P. M.	Nothing Scheduled—Use this time as you see fit.

EVENING SESSION

In conjunction with Orleans Parish Medical Society

8:00 to 8:45 P. M.	George M. Piersol, M. D., Medicine. Syphilis of the Cardio-Vascular System.
8:50 to 9:20 P. M.	Clifford B. Walker, M. D., Ophthalmologist. Retinal Detachment and its Relation to General Medicine and Surgery.
9:25 to 10:15 P. M.	Robert B. Osgood, M. D., Orthopedist. The Anatomical and Physiological Causes of Low Back Pain. Diagnosis and Treatment.

TUESDAY, MARCH 9

All Sessions of the Assembly will be held at the Roosevelt Hotel

8:00 to 9:00 A. M.	REGISTRATION—VIEW EXHIBITS.

MORNING SESSION

9:00 to 9:45 A. M.	Meredith Campbell, M. D., Urologist. Urinary Infections in Children.
9:50 to 10:20 A. M.	George Gray Ward, M. D., Gynecologist. Complications of Cancer Therapy in Gynecology, (Lantern Slides).
Intermission.	
10:20 to 10:35 A. M.	View Technical and Scientific Exhibits.
10:35 to 11:20 A. M.	George M. Piersol, M. D., Medicine. Acute Hepato-Cellular Disease.
11:25 to 12:10 P. M.	Lewis J. Pollock, M. D., Neurologist. The Relation of Trauma to Diseases of the Nervous System.

LUNCHEONS AND ROUND TABLE DISCUSSIONS

Room C. 12:15 to 1:40 P. M.	*Ophthalmology*: Clifford B. Walker, M. D. Diathermy and Galvanism in the Treatment of Retinal Detachment.
Room B. 12:15 to 1:40 P. M.	*Orthopedics*: Robert B. Osgood, M. D. The Relation of Faulty Body Mechanics to Fatigue and Joint Symptoms.
Room G. 12:15 to 1:40 P. M.	*Pathology*: John A. Kolmer, M. D. Etiology, Diagnosis and Treatment of Septicemia.
Dome room. 12:15 to 1:40 P. M.	*Surgery*: Hugh Trout, M. D. Peptic Ulcer.
Room E. 12:15 to 1:40 P. M.	*Urology*: Meredith Campbell, M. D. Urologic Problems in Children.

AFTERNOON SESSION

2:00 to 2:30 P. M.	H. J. Stander, M. D., Obstetrician. Classification of the Toxemias of Pregnancy—Low Reserve Kidney.
2:35 to 3:15 P. M.	Robert B. Osgood, M. D., Orthopedist. The Role of the Orthopedic Surgeon in the Treatment of Chronic Arthritis.
3:15 to 3:40 P. M.	View Technical and Scientific Exhibits.
3:40 to 4:20 P. M.	Meredith Campbell, M. D., Urologist. Enuresis (Lantern Slides).
4:25 to 5:00 P. M.	Hugh Trout, M. D., Surgeon. Aids in the Diagnosis of and the Management in the Treatment of Acute Intestinal Obstruction.
5:00 to 8:00 P. M.	Nothing Scheduled—Use this time as you see fit.

EVENING SESSION

8:00 to 8:50 P. M.	John A. Kolmer, M. D., Pathologist. Nature and Therapeutic Applications of Bacteriophage.
8:55 to 9:35 P. M.	Clifford B. Walker, M. D., Ophthalmologist. Neurological Ophthalmology (Traumatic Bitemporal Hemanopsia).

WEDNESDAY, MARCH 10

All Sessions of the Assembly will be held at the Roosevelt Hotel

8:00 to 9:00 A. M.	REGISTRATION—VIEW EXHIBITS.

MORNING SESSION

9:00 to 9:45 A. M.	Ralph M. Waters, M. D., Anesthetist. The Development of a Science of Anesthesia.
9:50 to 10:20 A. M.	A. Benson Cannon, M. D., Dermatologist. Present-day Trends in the Diagnosis and Treatment of Syphilis.
Intermission 10:20 to 10:50 A. M.	View Technical and Scientific Exhibits.
10:50 to 11:50 A. M.	Albert C. Furstenberg, M. D., Ear, Nose and Throat. Acute Supperations of the Mouth, Pharynx and Cervical Regions. (Lantern Slides).

LUNCHEONS AND ROUND TABLE DISCUSSIONS

Room E. 12:00 to 1:40 P. M.	*Anesthesia*: Ralph M. Waters, M. D. The Absorption of Carbon Dioxide from Anesthetic Atmospheres.
Room C. 12:00 to 1:40 P. M.	*Dermatology*: A. Benson Cannon, M. D. The Treatment of Vascular Anomalies of the Skin.
Dome Room. 12:00 to 1:40 P. M.	*Ear, Nose and Throat*: Albert C. Furstenberg, M. D. The Medical Treatment of Meniere's Symptom Complex.
Room B. 12:00 to 1:40 P. M.	*Gastro-Enterology*: Anthony Bassler, M. D. The Dysenteries—Amebic and Bacillary.

AFTERNOON SESSION

2:00 to 2:50 P. M.	Anthony Bassler, M. D., Gastro-Enterologist. Hepatic Insufficiencies in Relation to Bodily Disorders.
2:55 to 3:25 P. M.	Russell Cecil, M. D., Medicine. Serum Therapy of Lobar Pneumonia, with Special Reference to Some of the Newer Types.
Intermission. 3:25 to 3:45 P. M.	View Technical and Scientific Exhibits.
3:45 to 4:30 P. M.	Rolla Eugene Dyer, M. D., Preventive Medicine. Typhus.
4:35 to 5:05 P. M.	Wm. W. Babcock, M. D., Surgeon. Common Errors in Clinical Surgery (Illustrated by Colored and Black and White Lantern Slides.)
5:05 to 8:00 P. M.	Nothing Scheduled—Use this time as you see fit.

EVENING SESSION

8:00 to 8:45 P. M.	Julius Hess, M. D., Pediatrician. The Present Status of Serum Therapy.
8:50 to 9:30 P. M.	Eugene P. Pendergrass, Radiologist. The Small Intestine (Lantern Slides).

THURSDAY, MARCH 11

All Sessions of the Assembly will be held at the Roosevelt Hotel

8:00 to 9:00 A. M.	REGISTRATION—VIEW EXHIBITS.
	MORNING SESSION
9:00 to 9:30 A. M.	Anthony Bassler, M. D., Gastro-Enterologist. A Consideration of Diagnostic Criteria of Peptic Ulcer and Its Treatment.
9:35 to 10:25 A. M.	Albert C. Furstenberg, M. D., Ear, Nose and Throat. A Clinical and Pathological Study of Tumors and Cysts of the Head and Neck (Lantern Slides).
Intermission. 10:25 to 11:00 A. M.	View Technical and Scientific Exhibits.
11:00 to 11:50 A. M.	Rolla Eugene Dyer, M. D., Preventive Medicine. Rocky Mountain Spotted Fever.
	LUNCHEONS AND ROUND TABLE DISCUSSIONS
Tip Top Inn 12:00 to 1:40 P. M.	*Medicine*: Russell Cecil, M. D. Methods of Preventing Recurrence of Rheumatic Fever.
Room E. 12:00 to 1:40 P. M.	*Pediatrics*: Julius Hess, M. D. Problems in the Care of Premature Infants (Two Reel Film).
Room C. 12:00 to 1:40 P. M.	*Preventive Medicine*: Rolla Eugene Dyer, M. D. Laboratory Differentiation of Typhus and Spotted Fever. Demonstration of Methods, Infected Animals.
Room B. 12:00 to 1:40 P. M.	*Radiology*: Eugene P. Pendergrass, M. D. The Biliary Tract.
Dome Room. 12:00 to 1:40 P. M.	*Surgery*: Wm. W. Babcock, M. D. Technical Improvements in Biliary Surgery (Illustrated by Slides).
	AFTERNOON SESSION
2:00 to 2:30 P. M.	Ralph M. Waters, M. D., Anesthetist. Relations of Carbon Dioxide to Clinical Medicine.
2:35 to 3:05 P. M.	A. Benson Cannon, M. D., Dermatologist. The Diagnosis, Treatment and Prevention of Skin Cancer.
Intermission 3:05 to 3:55 P. M.	View Technical and Scientific Exhibits.
3:35 to 4:05 P. M.	Eugene P. Pendergrass, M. D., Radiologist. Silicosis.
4:10 to 5:00 P. M.	Julius Hess, M. D., Pediatrician. Special Therapeutic Procedures in Infancy and Childhood.
5:00 to 8:00 P. M.	Nothing Scheduled—Use this time as you see fit.
	EVENING SESSION
8:00 to 9:00 P. M.	Wm. W. Babcock, Surgeon. Advances in the Operative Treatment in Carcinoma of the Large Bowel (Illustrated in Color Motion Pictures and Lantern Slides).
9:10 to 9:50 P. M.	Russell Cecil, M. D., Medicine. Treatment of Chronic Arthritis, (Lantern Slides).

SHREVEPORT MEDICAL SOCIETY

The regular meeting of the Shreveport Medical Society was called to order on December 1, 1936, by the president, with 48 members and 3 guests present. The minutes of the previous meeting were read and adopted. Annual reports were then given by the officers and the various standing and special committees.

Unfinished Business: The committee on the application of Dr. P. R. Googe for membership in the society reported favorably and rules were suspended and Dr. Googe elected to membership by open ballot, the oath being administered by the president.

New Business: Application for membership in the society by Dr. Geza Aczel was received and the society ordered that it take the usual course.

Dr. Lucas introduced a resolution that the practice of certain druggists in counter-prescribing be investigated by the proper committee and recommendations made to the society. This motion was duly seconded and carried.

The following officers were then elected unanimously:

President—Dr. W. B. Heidorn.
1st Vice-President—Dr. R. T. Lucas.
2nd Vice-President—Dr. W. J. Sandidge.
Treasurer—Dr. D. R. McIntyre.
Secretary—Dr. P. D. Abramson.
Historian—Dr. J. M. Bodenheimer.
Delegates—Dr. C. P. Rutledge (3 year term); Dr. J. G. Yearwood (1 year term); Dr. O. C. Rigby, (1 year term); Dr. R. T. Lucas, (1 year term); Dr. J. T. Crebbin, (1 year term).
Representative Charity Medical Unit: Dr. W. M. Scott, (3 year term).

Dr. Barrow introduced a resolution that the society formally extend sympathy to Dr. J. M. Bodenheimer in his illness and that appropriate floral offering be sent. The resolution was duly carried.

Paul D. Abramson, M. D., Sec.

EAST BATON ROUGE PARISH MEDICAL SOCIETY

At the last meeting of the East Baton Rouge Medical Society, which was a joint meeting with the Staff of Our Lady of the Lake, the following officers were elected for the year 1937:

President—Dr. William K. Irwin, Baton Rouge.
First Vice-Pres.—Dr. Ashto Robins, Baton Rouge.
Second Vice-Pres.—Dr. T. L. Mills, Zachary.
Sec.-Treas.—Dr. J. L. Bevens, Baton Rouge.
Delegates—Drs. W. H. Cook, E. O. Trahan and Jeff McHugh.
Alternates—Drs. W. R. Eidson, Guy Riche and B. E. Nelken.

After the meeting a turkey supper was served in the dining room of the Sanitarium.

IBERIA PARISH MEDICAL SOCIETY

On December tenth, the Iberia Parish Medical Society was host at dinner to Dr. Edward Lacy King, visiting obstetrician, at the Evangeline Night Club. Dr. King had been conducting the Post-Graduate work in Obstetrics for the Third District.

Sixteen members and guests were present and enjoyed talks by Dr. King and Dr. Charles Horton, President-Elect of the Louisiana State Medical Society. Other speakers were Dr. C. C. DeGravelles, Councilor for the Third District, Dr. Guy Shaw, Third Vice-President of the State Society, and Dr. L. B. Long, Secretary-Treasurer of the Third District Medical Society.

The following officers were elected for 1937.
President—Dr. H. A. King, Jr., New Iberia.
Vice-Pres.—Dr. W. P. Tilly, New Iberia.
Sec.-Treas.—Dr. B. L. Stinson, New Iberia.
Delegate—Dr. H. M. Flory, New Iberia.
Alternate—Dr. E. N. Landry, New Iberia.

H. M. Flory, Secretary-Treasurer.
Webster Parish Medical Society.

SABINE PARISH MEDICAL SOCIETY

At the last meeting of the Sabine Parish Medical Society held in Converse, Louisiana at the Allen Sanitarium, Dr. H. M. Prothro and Dr. S. F. Fraser presented interesting cases which were discussed by the entire group present. Dr. L. H. Murdock presented a paper on "The Transfusion of Blood".

The following officers were elected for 1937:
President—Dr. W. D. Lester, Many.
Vice-President—Dr. J. W. Craig, Many.
Secretary-Treasurer—Dr. W. G. Allen, Converse.
Delegate—Dr. H. M. Prothro, Converse.
Alternate—Dr. S. F. Fraser, Converse.
Program Committee—Dr. L. H. Murdock, Chairman, Converse; Dr. S. F. Fraser, Converse; Dr. J. K. Phares, Many.
Cancer Committee—Dr. L. H. Murdock, Chairman, Converse; Dr. R. B. Stille, Many; Dr. S. F. Fraser, Converse.

Following the meeting refreshments were served by the nurses and dietitian of the hospital.

The next meeting will be held at the Court House in Many, Louisiana, on Friday, December 18, 1936 at 7:15 p. m.

EAST AND WEST FELICIANA BI-PARISH MEDICAL SOCIETY

Bi-Parish Medical Society was called to order by Vice-President A. S. Tomb, in the Rist Hotel. After bounteous repast prepared by Mr. and Mrs. August Rist, society passed regular order of business. Reading of minutes of previous medical meetings. Election of officers resulted as follows:

Dr. S. L. Shaw, President.

Dr. W. J. Robards, Vice-President.

Dr. E. M. Toler, Secretary-Treasurer.

Dr. E. H. Pargen, Delegate to the La. Medical Society.

Dr. B. B. Lane, Alternate.

Scientific program: Dr. Robards of East Louisiana State Hospital, presented a paper on roentgen ray plates as an adjunct to early diagnosis of pulmonary tuberculosis. Dr. Robards' paper was freely and favorably discussed by members present. A vote of thanks was extended to Dr. Robards for the presentation of his most excellent paper. All members and guests made favorable comments on the excellent dinner given us by Mr. and Mrs. Rist.

Members and guests present: Dr. and Mrs. Robards, Dr. and Mrs. S. L. Shaw, Dr. and Mrs. W. J. Roberts, Dr. and Mrs. G. L. Odom, Dr. and Mrs. E. H. Pargen, Dr. and Mrs. B. B. Lane, Jr., Dr. and Mrs. C. S. Toler, Dr. and Mrs. E. M. Toler, Dr. N. F. Stafford, Miss Hermine Tate, Miss Isadore Haynes, Dr. A. S. Tombs, Jr.

Society adjourned to meet in East Louisiana State Hospital, Jackson, Louisiana, the first Wednesday in February, 1937.

A. S. Tombs, President Protem.
E. M. Toler, Secretary.

TRI-PARISH MEDICAL SOCIETY

At the regular meeting of the Tri-Parish Medical Society (East and West Carroll, Madison and Tensas), held at Tallulah, Louisiana on December 1, 1936, the following officers were elected for the year 1937.

President—Dr. J. Preston Davis, Lake Providence.

Vice-Presidents—B. C. Abernathy, Sondheimer; Dr. E. D. Butler, Oak Grove, Dr. E. O. Edgerton, Tallulah; Dr. D. F. Davis, Newellton.

Secretary-Treasurer—Dr. William H. Hamley, Lake Providence.

Delegate—Dr. Joseph Whitaker, St. Joseph.

Alternate—Dr. B. L. Bailey, Epps.

Guest essayist at the meeting was Dr. R. A. Street of Vicksburg, Mississippi, whose subject was "Hyperemesis Gravidarum and Report of Cases Treated with Eschatin."

CLAIBORNE PARISH MEDICAL SOCIETY

At the Annual Meeting of the Claiborne Parish Medical Society held in Homer on December 1, 1936 the following officers were elected to serve for the years 1937.

President—Dr. C. O. Wolff, Haynesville.

Vice-President—Dr. E. B. Middleton, Homer.

Secretary-Treasurer—Dr. H. R. Marlatt, Homer.

Delegate—Dr. S. A. Tatum, Homer.

Alternate—Dr. H. R. Marlatt, Homer.

H. R. Marlatt, M. D., Sec.

POINTE COUPEE PARISH MEDICAL SOCIETY

The following officers have been selected for 1937:

President—Dr. F. F. Rougon, New Roads.

Vice-President—Dr. John S. Branch, Lettsworth.

Secretary-Treasurer—Dr. Eugene G. Durel, New Roads.

Delegate—Dr. R. McG. Carruth, New Roads.

Alternate—Dr. M. O. Becnel, New Roads.

AVOYELLES PARISH MEDICAL SOCIETY

The following officers have been selected for 1937:

President—Dr. Albert M. Abramson, Marksville.

Vice-President—Dr. Adrian B. Cairns, Bunkie.

Secretary-Treasurer—Dr. Kirby A. Roy, Mansura.

WEBSTER PARISH MEDICAL SOCIETY

The following officers have been selected for 1937:

President—Dr. R. E. Smith, Minden, Louisiana.

Vice-President—Dr. C. M. Baker, Minden, Louisiana.

Secretary-Treasurer—Dr. B. A. Norman, Minden, Louisiana.

Delegate—Dr. Wilkins McDade, Minden, Louisiana.

Alternate—Dr. W. C. Summer, Minden, Louisiana.

DESOTO PARISH MEDICAL SOCIETY

The following officers have been selected for 1937:

President—Dr. B. P. Smith, Keatchie, Louisiana.

Vice-President—Dr. F. O. Brinkley, Gloster, Louisiana.

Secretary-Treasurer—Dr. W. G. Jones, Mansfield, Louisiana.

Delegate—Dr. R. A. Tharp, Mansfield, Louisiana.

Alternate—Dr. W. B. Hewitt, Mansfield, Louisiana.

COLLEGE OF SURGEONS

During 1937 the American College of Surgeons is planning a Sectional Meeting to be held in Atlanta, Georgia, on February 3, 4, and 5. Headquarters will be at the Atlanta Biltmore Hotel, and the following states will participate: Georgia, Florida, North Carolina, South Carolina, Tennessee, Alabama, Mississippi, Louisiana.

An active Committee on Local Arrangements has plans in hand for a most interesting meeting. Dr. James L. Campbell is chairman, and Dr. D. Henry Poer is secretary of the Committee on Local Arrangements.

This meeting will be of interest not only to Fellows of the College but to the medical profession at large, and in addition, hospital trustees, superintendents, nurses, and other hospital de-

partmental personnel are invited to attend the hospital conference.

There will be no registration fee.

AMERICAN ASSOCIATION FOR THE STUDY OF GOITER

The American Association for the Study of Goiter again offers the Van Meter Prize Award of $300.00 and two honorable mentions for the best essays submitted concerning experimental and clinical investigations relative to the thyroid gland. This award will be made at the discretion of the Society at its next annual meeting to be held in Detroit, Michigan, June 14, 15, and 16.

The competing manuscripts, which should not exceed 3000 words in length, must be presented in English and a typewritten double spaced copy sent to the Corresponding Secretary, Dr. W. Blair Mosser, 133 Biddle Street, Kane, Pennsylvania, not later than April 1, 1937. Manuscripts received after this date will be held for competition the following year or returned at the author's request.

NEWS ITEMS

The Southeastern Branch Society of the American Urological Association met in Charlotte, North Carolina, December 4 and 5, 1936 with Dr. H. W. E. Walther presiding. A series of papers were presented by distinguished urologists from the north, east and south.

Assistant Surgeon John W. Jolley was relieved from duty, U. S. Marine Hospital, St. Louis, Mo., on December 1, 1936 and ordered to the U. S. Quarantine Station, New Orleans (Algiers) La., for duty.

Prof. T. B. Sellers of the faculty of the Graduate School of Medicine of the Tulane University of Louisiana, conducted a course in extension teaching of obstetrics at Jennings, La., during the week of December 7, 1936.

Prof. Walter E. Levy, Chief of the Division of Obstetrics of the Graduate School of Medicine of The Tulane University of Louisiana, conducted a course in extension teaching of obstetrics at Donaldsonville, La., during the week beginning December 14, 1936.

HEALTH OF NEW ORLEANS

The Department of Commerce, Bureau of Census reports that for the week ending November 14 there were 139 deaths in the city of New Orleans, distributed 67 white and 71 negroes. The death rate for this week was only 15.0. The infant mortality rate was 64. For the succeeding week, ending November 21, the deaths totaled 154 with a rate of 16.7. These deaths were divided 88 white and 66 negro. The infant mortality rate obtained the surprisingly low figure of 35. For the next week, ending November 28, there was some increase in the number of deaths, 163 citizens in the city succumbed from disease or accident this week. Of these 105 were white and 58 were negroes. The death rate for the whole group was 17.7. The infant mortality rate this week had jumped up to 87. There was a big increase in the number of deaths for the week ending December 5, there being 196 deaths of which 114 were in the white population and 82 in the negro. The death rate for this week was 21.3. The infant mortality rate was 52. No figures were published as to the relative rate in the white and negro races for the 4 weeks reported here.

The death rate for the first 49 weeks of the year is 18.2 as contrasted with a rate of 16.2 for the corresponding weeks of 1935. The increase in the death rate this year is not peculiar to New Orleans, it being somewhat higher in most cities reporting to the Bureau of Census.

INFECTIOUS DISEASES IN LOUISIANA

Dr. J. A. O'Hara, Epidemiologist for the State of Louisiana has furnished us with the weekly morbidity reports for the State of Louisiana, which contain the following summarized information: For the week ending November 14, the 46th week of the year, the following diseases occurred in double figures: 41 cases of pneumonia, 40 of cancer, 39 of tuberculosis, 34 of malaria, 28 of syphilis, 17 each of scarlet fever and diphtheria, 16 of whooping cough and 14 of septicemia. The following unusual diseases were reported: 2 cases of poliomyelitis, 1 each from E. Carroll and Ouachita Parishes. A case of smallpox was discovered in Caddo Parish. Three patients with undulant fever were found in Ascension, Avoyelles and Jefferson Davis Parishes. For the next week, completed November 21, pulmonary tuberculosis led all reportable diseases with 41 cases followed by 39 cases of pneumonia. Other diseases occurring in double figures that were listed included 37 cases of gonorrhea, 33 of cancer, 30 of syphilis, 27 of diphtheria, 24 of influenza, 18 of malaria, 17 of scarlet fever and 15 of typhoid fever. Of the typhoid fever cases, Vermilion Parish, with 4 reported, had twice as many as any other Parish. Thirteen patients with diphtheria came from Orleans Parish. One case of poliomyelitis originated in Tensas Parish. A case of meningitis was reported from Catahoula Parish and 1 case of undulant fever from Bossier. The pulmonary diseases again led all other reported diseases the next week, which ended November 28. There were 43 cases of pneumonia and 35 cases of pulmonary tuberculosis reported by the Bureau of Epidemiology. Next in frequency occurred the following diseases: 29 cases of cancer, 17 of gon-

orrhea, 16 of influenza, 15 of syphilis, 14 each of malaria and typhoid fever and 12 of diphtheria. Of the typhoid fever cases, East Carroll Parish reported 4. Five cases of poliomyelitis were listed, 4 from Orleans and one from St. Tammany. Orleans Parish also reported 1 case of cerebrospinal meningitis and 1 case of undulant fever, while from East Baton Rouge Parish, 1 case of typhus fever was reported. The week ending December 5, the most frequent of all reported diseases, syphilis, led the list with 55 cases and was followed closely by pneumonia with 48 reported cases. Then came diphtheria with 30 followed by 27 of cancer, 22 of gonorrhea, 17 of pulmonary tuberculosis and 10 of malaria. Of the more unusual diseases, Union Parish reported 1 case of smallpox. From Orleans Parish there was reported 2 cases of paratyphoid, 2 of tularemia and 15 of diphtheria. Three cases of poliomyelitis were listed; 2 from Orleans Parish and 1 from Iberville. For the 50th week of the year, ending December 12, 47 cases of pneumonia were listed and 28 of pulmonary tuberculosis, respiratory tract diseases again being the most frequently reported of all diseases. Then came 27 cases of cancer, 23 of syphilis and 14 of diphtheria. Pneumonia cases were just about at the average for the 5 year period, for this particular week. On the other hand a surprisingly few number of cases of influenza are listed for this time of the year, the 5 year average for this week for this disease being 1000.4. Another case of poliomyelitis was reported in the State, this time from Caldwell Parish and a case of encephalitis was reported from Acadia Parish. In this 5 week period reported here, 1 or more cases of poliomyelitis has been listed each week.

WOMAN'S AUXILIARY
Louisiana State Medical Society

President, Mrs. James Byron Vaughan, Monroe.

President-Elect, Mrs. George D. Feldner, New Orleans.

First Vice-President, Mrs. F. G. Ellis, Shreveport.

Second Vice-President, Mrs. T. H. Watkins, Lake Charles.

Third Vice-President, Mrs. E. B. Middleton, Homer.

Fourth Vice-President, Mrs. A. R. Arceneaux, Welsh.

Recording Secretary, Mrs. C. Grenes Cole, New Orleans.

Corresponding Secretary, Mrs. Joseph P. Brown, Monroe.

Treasurer, Mrs. Courtland P. Gray, Monroe.

Parliamentarian, Mrs. R. T. Lucas, Shreveport.

While this issue of the Journal goes to press before Christmas, it will not, in all probability, reach you, dear readers until after the Yuletide Season has passed. Nevertheless, my wishes are none the less sincere that you and those about you may enjoy a most bountiful and Merry Christmas Day and may the New Year bring to you Happiness, Good Health and Prosperity.

Mrs. George D. Feldner,
Chairman, Press and Publicity.

OUACHITA PARISH

The Woman's Auxiliary to the Ouachita Parish Medical Society held their monthly luncheon at the Lotus Club, November 18, 1936. The hostesses for this month were Mrs. Graves, Mrs. Peters, Mrs. Milan, Mrs. Williams and Mrs. Gregory. During the luncheon, Mrs. Louis Whitfield sang a lovely solo, accompanied at the piano by Mrs. J. Kugler. Miss Bernice Wright, Executive Chairman of the Tuberculosis Association of Ouachita Parish, gave a most interesting talk to the members, outlining their work here and the development of the new hospital at Pine Top. She told of the number of hospitals for tuberculous patients and their capacity, in comparison with the number of cases. Mrs. J. P. Brown, President, presided at this interesting meeting. Mrs. Brown announced at this time that no luncheon or meeting would be held during the month of December and as is usual with our auxiliary, the proceeds usually used for these purposes, will be donated to charity.

Mrs. W. L. Bendel,
Publicity Chairman.

JEFFERSON DAVIS PARISH

The Woman's Auxiliary to the Jefferson Davis Parish Medical Society held their December meeting in Welsh at the home of Mrs. E. V. LaCour. Mrs. R. R. Arceneaux conducted an interesting program. The January meeting will be held in Crowley with Mrs. J. W. Faulk.

Mrs. Claude A. Martin,
Publicity Chairman.

ORLEANS PARISH

The Woman's Auxiliary to the Orleans Parish Medical Society enjoyed one of the interesting meetings of the season on December 9. Splendid reports from committee chairmen show that work of the Educational Program is making excellent progress.

The committee which undertook the raising of funds for our gift to the Orleans Parish Medical Library has done a fine piece of work. By their efforts, with the co-operation of our members, they have raised a sum of over four hundred dollars which will be given to the Medical Society to be used in binding and re-conditioning books in the library. The Christmas Seals are now on sale, which means that the work of the Tuberculosis

Committee, which was begun during the hot summer months, is now over.

The lovely posters with their health messages to children are now being enjoyed by each grade of the public schools. These were distributed during the past month as a gift from our organization in our campaign against tuberculosis. The work of the committee on safety, which is to be sponsored through the Woman's Auxiliary, have plans to encourage safe automobile driving.

Following the business meeting, Mrs. Arthur Nolte describes the unusual details of her trip with Mrs. Elizabeth Gilmer to the Orient and unfrequented islands of the Pacific.

Mrs. Edgar Burns,
Publicity Chairman.

BOOK REVIEWS

Principles of Human Physiology: By Ernest H. Starling, C. M. G., F. R. S., Rev. and ed. by C. Lovatt Evans, D. Sc., F. R. C. P., F. R. S.: Chapters on Central Nervous system and Sense Organs revised by H. Hartridge, M. A., M. D., Sc. D., F. R. S. Philadelphia, Lea & Febiger, 1936. pp. 1096. Price $8.75.

The rapid growth of modern physiology is shown by the appearance in the last few years of new text-books and new and revised editions of some of the standard works. Among the latter group is the present volume, the 7th edition of one of the more informative of the human physiologies. Here is a wealth of material, old and new. New features, discussed in more or less detail according to their importance, deal with the vitamins, the hormones, the transport of carbon dioxide by the blood, the humoral transmission of nervous impulses, the recording of nervous impulses, the study of the reproductive cycle.

This is one of the best of the larger text-books of physiology. Clinicians will find here much that will aid them in understanding disease or abnormal physiology.

HENRY LAURENS, Ph. D.

A Manual of Pharmacology: By Torald Sollmann, M. D. 5th ed. Philadelphia. W. B. Saunders, 1936. pp. 1190. Price $7.50 net.

Professor Sollmann's aim has been to "furnish medical students—including interested practitioners—an outline of the current conceptions of the actions of drugs, especially from the point of view of their practical importance." In this he has been successful to a degree which must arouse the admiration of anyone whose task it is to give instruction in this branch of the medical sciences. In this book, more than in any other known to the reviewer, the student or doctor can find a complete, clear and correct statement of the clinically important actions and properties of the clinically important drugs. In addition, one interested in the more theoretical aspects of pharmacology can obtain much information otherwise obtainable only at the cost of finding and reading countless original publications. An extensive and accurate bibliography of articles referred to in the text is a feature which adds much to the value of the work.

The reviewer does not hesitate to express his opinion that a copy of this manual should be available to anyone desirous of acquiring a useful knowledge of the habit of prescribing.

J. T. HALSEY, M. D.

Tumors of Bone, Including Jaws and Joints: By Charles F. Geschickter, M. D. and Murray M. Copeland, M. D. Rev. ed. New York City, Amer. Jour. of Cancer, 1936. pp. 832.

A foreword by Dean Lewis summarizes the interpretation of clinical findings in patients suspected of having bone tumors, and a second foreword by the late Joseph Colt Bloodgood outlines rules of diagnostic and therapeutic procedure for bone lesions.

In their introduction, the authors present what they consider the fundamentals of the genesis of primary bone tumors; i. e., there is a continuous transitional process incident to the development and maintenance of the skeleton even throughout adult life, and it is in association with the transitional phases occurring during osteogenesis that neoplasms of bone arise. The tumors related to osteogenesis are classified and sub-classified according to whether they are derived from precartilaginous connective tissue or whether they are related to growth subsequent to chondrification. The bone tumors of non-osseous origin are considered separately. In addition to the preliminary review of the embryonic processes concerned in the formation of bone, the salient points are reiterated as they pertain to particular tumors.

In general, the presentation is primarily from the standpoint of the genesis and pathology of the various bone neoplasms, with secondary consideration of their anatomical distribution. However, there is a chapter on such specialized skeletal structures as the cranium, jaws, and articular structures; a chapter devoted to a discussion of the osseous changes which occur in diseases of the bone marrow and lymphoid tissue; a chapter in which tumors of tendon sheaths, joints, and bursae are reviewed; and a special chapter on juvenile lesions of bone. A chapter on differential diagnosis presents the characteristics of non-neoplastic

diseaeases which are frequently responsible for errors in diagnosis and included with this chapter is an ingenious roentgenographic diagnosis chart for diseases and tumors of bones.

A concise summary, including diagnostic suggestions, prognosis, and general principles of treatment, supplements the description of each type of bone tumor.

The authors have very ably coupled or blended their personal observations, interpretations, and conclusions based principally upon a critical and organized study and review of material in the Surgical Pathological Laboratory of the Johns Hopkins Hospital, with the accumulated material, observations, and deductions of other workers who have studied the pathogenesis and clinical manifestations and management of bone tumors. Heretofore formulated and accepted concepts of certain bone tumors are disputed or refuted in several instances in which the authors consider new evidence has been adduced or more rational interpretation is available. However, many controversial aspects of bone tumors are necessarily left unsettled and the authors indicate that judgment or decision as to procedure must in many cases be based on extended clinical observations accompanied by study of serial roentgenograms in the individual case.

The book is profusely illustrated with excellent photomicrographs, photographs of gross specimens, and reproductions of roentgenograms. There is a short but well selected bibliography following each chapter.

AMBROSE H. STORCK, M. D.

Endocrinology in Modern Practice: By William Wolf, M. D., M. S., Ph. D. Philadelphia. W. B. Saunders, 1936. pp. 1018. Price $10.00.

This title for this work has been chosen with care because it is well suited to the content of material arranged throughout so as to present information to the practitioner who wants some assistance in establishing a diagnosis where glandular dysfunctions are concerned. The volume has been written about a mass of material whose clinical application is constantly stressed.

There is a conventional approach to the problems of presenting each member of the endocrine series, and one therefore finds each one described in its own chapter which opens with a relatively brief discussion of anatomy, histology, embryology, biology and physiology; embodies a more elaborate description of the better-recognized clinical states connected with the gland; and closes with a concise summary. For each of the following, there is a chapter: obesity. sterility, pregnancy. and the menopause. A large portion of the content involves discussion of what is entitled "The Endocrine Aspects of 'Non-Endocrine' Disease." In this section, there is presented for many of the frequently-encountered diseases a short discourse on the associated glandular abnormalities which are only too often not heeded while the presenting illness is treated. A third division, "Endocrine Diagnosis," is an orderly presentation of the various detailed steps taken along the road to the establishment of a diagnosis of disturbances of the ductless glands. Especially to be commended are those chapters which describe briefly the important laboratory tests and give somewhat more in detail their clinical significance. Here the practitioner will find in a very short form real data about the tests which are mentioned so often in everyday practise, how they are done, what they are intended to reveal, and what their limitations are. This section of the book provides a chapter on the choice of diagnostic procedures which may be made when a given glandular abnormality is suspected. The concluding, and smallest, portion of the work deals with therapeusis and does not measure up to the standard set by the earlier sections. The author tabulates the more commonly prescribed preparations and fails to note his personal experiences or to separate those which have some merit from those which are known to be inefficacious or inert. This is an error, for when glandular therapy is as confused as today, the tabulation of worthless preparations alongside the reputable products is apt to be considered by the uncritical as indicating that all those listed are acceptable despite the fact that the author introduces his subject by disclaiming any preferences and by announcing that he is merely listing and is not discussing these proprietaries.

This is an outstanding work which richly merits a place of usefulness in the library of everyone who considers glands of internal secretion. The concise summaries will appeal especially to the busy physician and the medical student; the more detailed text will provide a real delight for the one who reads it more leisurely. Because the author has attempted to approach his problem from several angles and has presented his material so that it may be available from any one of the several viewpoints commonly adopted by physicians consulting such works, there is a considerable amount of repetition. This is more an asset than a liability since the salient facts are presented a bit more forcefully thereby.

Dr. Wolf is to be commended for his orderly and scholarly efforts to transform things endocrinologic from the bewildering reports of experimental research to the more familiar domain of the practise of medicine.

SYDNEY JACOBS, M. D.

Fundamentals of Human Physiology: By J. J. R. Macleod, M. B., D. Sc., F. R. S. and R. J. Sey-

mour, M. S., M. D. St. Louis, The C. V. Mosby Company, 1936. pp. 424. Price $2.50

This excellent elementary text in physiology was first published by Pearce and Macleod in 1916 and revised by them in 1918 and 1924. The present revision has been by Professor Seymour "with but two ideas in mind, simplification of discussion and the addition of some of the newer facts that have been accepted by physiologists."

The major changes that have been made are concerned with the discussion of the vitamins and the endocrine glands which have been considerably amplified. The discussion of metabolism has been condensed to approximately half the space devoted to it in the previous edition and the chapter on immunity has been advantageously simplified. Approximately 30 figures and diagrams and a brief glossary have been added.

One minor criticism may be offered. In attempting to avoid controversial statements, the author has in a few instances perhaps unnecessarily abbreviated the discussions. Thus in discussing the anterior pituitary, brief mention is made of the growth, thyreotropic and adrenotropic hormones, but no mention is made of the intimate connection between the anterior pituitary and the gonads, a relationship which can hardly be questioned at the present time, even though some of the details may still not be clear. Otherwise, the newer material has been ably incorporated and the volume can be unreservedly recommended for use in introductory or elementary courses in human physiology.

H. S. Mayerson, Ph. D.

Theory and Practice of Psychiatry: By William S. Sadler, M. D. St. Louis, C. V. Mosby Company, 1936. pp. 1231. Price $10.00.

A bound volume of 131 pages, divided into five parts with twenty-seven chapters, which could be classed as a combined old and new testament of the theory and practice of psychiatry, giving in detail the genesis of psychiatry through its various highways and bi-ways to a glossary intelligently prepared, and one which is essentially necessary when reading this text by way of explanatory data. The mental mechanisms, psycho-pathology, etiology, symptomatology and classificatiion of the psychoses are arranged in concise order, with a continuity easily read and understood.

The volume is especially planned for reading by the general practitioner and the social worker. The specialist will find much collateral reading aside from the psychiatric content. The mental hygienist and those dealing with personality problems can be guided to a great extent by the case histories which, in themselves, are illuminating and helpful.

The chapter on religious therapy is timely, conceding the necessity of a combined pastoral and medical-social psychiatry.

The "Philosophies of Life" are well covered in Chapter 74. The chapter dealing with therapeutics, embracing all types, likewise therapies, bespeaks not only an inexhaustible investigation but practical application as well.

This volume should please the most critical general practitioner and the most meticulous psychiatrist as an aid not only in collateral reading but as a *vade mecum* of psychiatry.

Walter J. Otis, M. D.

American Martyrs to Science through the Roentgen Rays: By Percy Brown, M. D., F. A. C. P., F. A. C. R., Springfield, Ill. Charles C. Thomas, 1936. pp. 276, por. Price $3.50.

Not long after the discovery of the roentgen ray, there appeared in the medical literature reports of superficial x-ray burns. Shortly thereafter, reports were made of numerous cases of skin cancer developing on the hands and faces of physicians who had previously received roentgen ray burns, and many of them persisted in the use of the roentgen rays in spite of their intense suffering. Some developed metastasis and died as a result of their affliction. If the present day radiologist enjoys the protective devices of our modern roentgen ray apparatus, he can thank those pioneers who became martyrs to science in order that those who were to follow in this kind of work would be protected against the dangers of the use of roentgen rays.

Dr. Percy Brown, a prolific medical writer, has paid tribute to those pioneers who became martyrs to science. His book can well serve, lest we forget, as a reminder of the sacrifice made by these noble people. It also vividly describes the courage and enthusiasm displayed by the early users of the roentgen rays in their efforts to promote the progress of roentgenology.

To those who are interested in the development of the science of roentgenology, they will find in this book a rendition of true American spirit of sacrifice by these noble pioneers who, by giving their lives, have blazed the path for the existence of modern roentgenology.

Leon J. Menville, M. D.

Medical Classics: Compiled by Emerson Crosby Kelly, M. D., Baltimore, Williams and Wilkins, 1936. Price $10.00 per year.

"Medical Classics", an entirely new conception of medical history which is being published by Williams and Wilkins, should be not only of interest to those physicians who have a love for the history of medicine, but also to the practitioners of medicine. As stated in the preface, it is desired that "Medical Classics" will be not only of his-

torical interest but also of practical value. Original publications of fundamental importance will be published in detail and not merely a synopsis of the article so that the reader can have a true picture of the author's original conception of the disease entity.

In the first number are two of Sir James Paget's original contributions on osteitis deformans and also his original description of the disease of the mammary areolar, which bears his name. In addition to these publications of Paget's, which are given in full, there is Paget's complete biography. Preceding each of the two subjects discussed by Paget is a short resumé of the subject by the editor, giving a summary of the present day conception of the condition. "Medical Classics" should fill a very definite need in medical practice, and it is the reviewer's opinion that the intention of the editors will be fulfilled.

ALTON OCHSNER, M. D.

The Relief of Pain: A handbook of Modern Analgesia: By Harold Balme, M. D., (Durk.), F. R. C. S., (Eng.), D. P. H. (Land.), Philadelphia, P. Blakiston's Son & Co., 1936. pp. 392. Price $4.00.

This book is a resume of the therapeutics of many of the painful conditions to which man is subject. The first portion is devoted to a discussion of the general aspects of pain, its physiology, and the various theories related thereto. Following this, regional pains are considered with regard to causes and the available measures of relief that may be instituted. The concluding chapters are devoted to certain phases of physiotherapy and some of the analgesic drugs.

Although brief and therefore lacking in detail, it is wide in its scope and deals quite logically with such difficult subjects as sciatic syndrome and trigeminal neuralgia with the same facility as the technic of a nearly painless hypodermic injection.

The frequent use of British Pharmacopeial terms and of proprietary drugs will no doubt be a source of confusion to many readers in this country.

The book is well indexed and should serve as a useful reference work, especially for the general practitioner.

W. D. NORMAN, M. D.

Surgical Clinics of North America: New York number, June, 1936, Philadelphia; W. B. Saunders Co., 1936. pp. 266. Price $2.50.

This small volume contains some twenty-two articles presented in a concise manner, covering timely and interesting subjects. The neurosurgeon will find the article by Dr. Byron Stookey especially interesting, while the orthopedist will note a well presented discussion on the treatment of slipping of the upper femoral epiphysis. The genitourinary surgeon will find a comprehensive article on urinary infections in infants and children. The remaining portion of the volume deals with subjects pertaining to general surgery. Especially timely are the clinics dealing with surgical diseases of the parathyroids, this relatively new field being well discussed.

W. D. NORMAN, M. D.

The Eye and Its Diseases: By 82 International authorities; edited by Conrad Berens, M. D.; Philadelphia, W. B. Saunders Co., 1936. pp. 1254. Price $12.00.

English-speaking ophthalmologists are indebted to Dr. Eerens for having compiled a new and excellent type of text book. In one volume, over seventy authors have contributed more information about eyes than is contained in any one book ever printed. It presents, and often in improved form, information and ideas seen in such outstanding ophthalmic text books as the seven volume Kurtzes Handbuch fur Augenheilkunde, De Schweintiz, and Weeks. Written essentially for the juvenile or adult opthalmologist, this work is possibly too detailed for those seeking only the ABC'S.

Mention of the relative merits of many chapters and authors is impossible. Outstanding, in the reviewer's opinion, are the chapters on History of Ophthalmology, Anatomy of the Orbit, the Slit-lamp and Corneal Microscope, Developmental Defects, Glaucoma, Medical Ophthalmology, Surgery of the Eye and Immunology.

The lack of a uniform classification and a detailed table of contents somewhat reduce the practical value of this otherwise excellent work, as does repetition by overlapping of subjects. The study, especially of rarer ocular conditions, apparently is made needlessly difficult.

Both the authors and publishers are to be congratulated on the large number, and excellence of the black and white illustrations. One hardly misses colored illustrations that of course would have made this work prohibitive in price, as is the case with similar German volumes.

CHAS. A. BAHN, M. D.

The Clinical Use of Digitalis: By Drew Luten, M. D., Baltimore, Charles C. Thomas, Co., 1936. pp. 226. Price $3.50.

The therapeutic use of digitalis is of interest to any medical man treating diseases of the heart. The author presents in a concise form clinical facts derived from old and recent literature, and with these he gives the results of his personal experience with digitalis and of original work done by himself.

The early part of the book concerns the practical physiology of the action of digitalis on normal and diseased hearts, stressing the muscular action of the drug as compared to its effect on the auriculo-ventricular bundle and the pace maker of the heart. The diuretic effect, the response of blood vessels and blood pressure, and electrocardiographic effects are discussed, as is the toxicology of digitalis. The subject matter is considered almost exclusively from the point of view of clinical experience and experimentation on human beings. Following this is given a detailed discussion of modern views concerning the indications, the methods of administration, contra-indications and dangers of digitalis. He closes with an excellent four-and-a-half page therapeutic thesis on the usage of the drug. In some parts of the book there is, perhaps, a tendency toward repetition, especially in the chapters concerning the physiological action of the drug on muscle, and its use in auricular fibrillation. The author's conclusion concerning methods of administration is most interesting in that he states that even now the best general guide to administration is that described by Withering in his original article on digitalis in 1785.

A few minor points might be considered as moot questions, but as a whole the arguments and reasoning are convincing and the therapeutic thesis is sound. The subject matter as a whole is briefly and accurately presented. An excellent and adequate bibiography is given. My experience with the drug does not qualify me to speak as a teacher, but as a graduate student I can say that the book proved decidedly valuable, and anyone, student or practitioner, who will use digitalis cannot help but derive benefit from studying this little volume.

G. F. Ellinger, M. D.

International Clinics, Sept., 1936. Philadelphia, J. B. Lippincott, 1936. pp. 339. Price, 2.50.

In a discussion of a book of this nature, the reviewer cannot see any advantage in detailing the many excellent features of the well-written articles that make up this volume. The present book has very much to interest the internist. Of particular interest to the Professors locally is an article entitled "Pilonidal Sinus" by Dr. Mims Gage which because it is comprehensive, beautifully illustrated and written, should be mentioned.

I. L. Robbins, M. D.

Medicine and Mankind; with an introduction by Eugene H. Pool, M. D.; edited by Iago Galdston, M. D. New York, D. Appleton-Century Co., Inc. 1936, pp. 217. Price $2.00.

This book contains a group of lectures which were delivered to the laity at the New York Academy of Medicine. Among the contributors are to be found such illustrious names as Harlow Brooks, George Draper, Elmer V. McCollum and Alexis Carrel. In these lectures are unfolded matters of vital interest concerning the body, the mind and their intimate relationships. The mystery of death and the story of vitamins are informative and interesting. Medicine of the Primitive Indian of the time of the grand monarch Louis XIV is calculated to hold the rapt attention of the reader. Though written in a popular style for the laity, it may well be read by the doctor with profit and pleasure.

I. L. Robbins, M. D.

Facts About Commercially Canned Foods. New York, American Can Co., 1936. pp. 34.

This brochure published by the American Can Co., is a collection of reprints concerning the process of canning and facts about commercially canned foods.

I. L. Robbins, M. D.

PUBLICATIONS RECEIVED

P. Blakiston's Son & Company, Inc., Philadelphia: Oral Diagnosis and Treatment Planning by Samuel Charles Miller, D. D. S.

Harper & Brothers, Publishers, New York: Canary by Gustav Eckstein.

Harvard University Press, Cambridge: The Truth about Bright's Disease by William R. Ohler, M. D.

Hodder and Stoughton, Publishers, London: Patient and Doctor by Sir Henry B. Brackenbury, M. D., LL. D., M. R. C. S.

Paul B. Hoeber, Inc., New York: Skin Diseases in Children by George M. Mackee, M. D., and Anthony C. Cipollaro, M. D.

J. B. Lippincott Company, Philadelphia: International Clinics edited by Louis Hamman, M. D., Volume IV, Forty-Sixth Series, December 1936. A Textbook of Medicine by Charles Phillips Emerson, M. D.

The Macmillan Company, New York: Diseases of the Coronary Arteries and Cardiac Pain edited by Robert L. Levy, M. D. Truants by Lord Moynihan, K. C. M. G., C. B. of Leeds. Practical Examination of Personality and Behavior Disorders by Kenneth E. Appel, M. D., Ph. D., Sc. D., and Edward A. Strecker, M. D., A. M., Sc. D.

Rehabilitation Clinic, New York City: Vocational Rehabilitation and Workmen's Compensation by Carl Norcross, Ph. D.

William Wood and Company, Baltimore: A Synopsis of Surgical Anatomy by Alexander Lee McGregor, M. Ch. (Edin.), F. R. C. S. (Eng.)

The Williams & Wilkins Company, Baltimore: Lectures on Embolism and Other Surgical Subjects by Gunnar Nystrom, M. D.